

**FOOD INSECURITY IN SOUTH WESTERN ZIMBABWE:
THE VULNERABILITY OF PRIMARY SCHOOL CHILDREN IN MATOBO DISTRICT**

By

Nkululeko Joshua Ndiweni

214584158

A thesis submitted in fulfillment of the requirements for the degree of

Doctor of Philosophy

College of Humanities

University of KwaZulu-Natal

Supervisor: Prof. Sadhana Manik

2019

DEDICATION

I dedicate this study to my family for their continued and unwavering support for me.

ACKNOWLEDGEMENTS

There are a number of people without whom this thesis might not have been written, and to whom I am greatly indebted.

- I offer my gratitude and appreciation to my supervisor, Prof. S. Manik, your insightful criticisms, patient encouragement and scholarly advice aided the writing of this thesis in innumerable ways;
- Buhle Ndiweni, my wife, who played a great role in creating an enabling environment for researching and learning by providing emotional and material support;
- The Ministry of Primary and Secondary Education (Matabeleland South Province) for granting me the opportunity to carry out my research in Matobo district;
- The school Headmasters/Principals for allowing me into their schools and gather data;
- The teachers and parents who stalwartly yielded to my request to interview them;
- The Pro-Vice Chancellor of Lupane State University, Dr Nomathemba Ndiweni, who always asked staff members on study-leave to submit progress reports and encouraged us to soldier on in this academic journey.
- Loving thanks to my friends and work colleagues who played such important roles along the journey, as we mutually engaged in making sense of the various challenges we faced and in providing encouragement to each other at those times when it seemed impossible to continue.
- All those who, in one way or another, lent a helping hand to the completion of this project.

Finally, I gratefully acknowledge the power of the Almighty God that kept me going at all times, the Divine who continues to make the impossible possible.

DECLARATION - PLAGIARISM

I,**Nkululeko Joshua Ndiweni (214584158)**....., declare that

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Signed.....

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ABSTRACT

While the capacity and resources in the world are sufficient to ensure adequate and nutritious food for everyone (Ignowski, 2012; Sharma et al., 2016), worldwide household food insecurity has risen amongst the low income population who are significantly more vulnerable to the health and environmental risks posed by climate change and socio-economic factors. This has triggered nutrition problems and health challenges amongst children due to increased hunger. There is a plethora of studies on food insecurity in rural and urban areas in general in Zimbabwe but less work has focused on children's vulnerability to food insecurity. The purpose of this study was to explore children's vulnerability to food insecurity in primary schools of south western Zimbabwe, a drought prone area, through the lens of their teachers and parents. A case study of six primary schools was sampled in the Matobo district. Twelve school administrators and eighteen teachers were interviewed and there were six focus group discussions with parents of vulnerable children. The framework for this study is based on AmartyaSen's (1981) 'entitlement approach' that food insecurity is a result of people not having enough command over food. The study revealed that there were social and physical effects of food insecurity that negatively affect children and their learning. Learners are vulnerable to food insecurity as a result of social, economic and environmental conditions. Although supplementary feeding programmes have been implemented to curb the effects of food insecurity, the strategy is less effective due to a shortage of resources to provide nutritious diets to the learners and it is only learners in lower grades who access food. Some schools are yet to implement supplementary feeding programmes that address the nutrient needs of the learners, albeit some schools have managed to source donors that are supplying nutritious foods for all their learners. Most participants recommended a nutrient rich feeding programme that caters for the whole school and the involvement of various stakeholders in order to access enough resources to address learners' vulnerability to food insecurity amongst in primary schools in Matobo district.

Table of Contents

DEDICATION	II
ACKNOWLEDGEMENTS	III
ABSTRACT	V
LIST OF FIGURES	XI
LIST OF TABLES.....	XII
LIST OF ACRONYMS	XIII
CHAPTER ONE:	1
BACKGROUND TO THE STUDY.....	1
1.1 INTRODUCTION	1
1.1.1 FOOD SECURITY AND FOOD INSECURITY	2
1.1.2 DETERMINANTS OF A GROWING ECONOMIC RECESSION IN ZIMBABWE	3
1.1.3 EFFECTS OF FOOD INSECURITY ON CHILDREN.....	5
1.1.4 SCHOOL FEEDING PROGRAMMES	7
1.2 RESEARCH PROBLEM AND RATIONALE	8
1.3 AIM OF THE STUDY	9
1.4 OBJECTIVES OF THE STUDY	9
1.5 CRITICAL RESEARCH QUESTIONS	9
1.6 SIGNIFICANCE OF THE STUDY.....	9
1.7 WHY MATOBO DISTRICT OF ZIMBABWE?	10
1.8 THEORETICAL AND ANALYTICAL FRAMING FOR THE STUDY	12
1.8.1 UNSUSTAINABLE POLICIES IN ZIMBABWE	14
1.9 OUTLINE OF THE CHAPTERS OF THE THESIS.....	16
1.10 CONCLUSION	17
CHAPTER TWO	19
LITERATURE REVIEW AND THEORETICAL UNDERPINNINGS FOR THE STUDY	19
2.1 INTRODUCTION	19
2.2 FOOD SYSTEMS	19
2.3 THEORIES OF FOOD SECURITY	22

2.3.1 NEO-MALTHUSIAN THEORIES.....	23
2.3.2 TECHNO-ECOLOGICAL THEORY	23
2.3.3MODERNISATION THEORY	24
2.3.4URBANIZATION THEORY	24
2.3.5SOCIAL STRATIFICATION	25
2.3.6 MILITARISATION THEORY.....	25
2.4 DETERMINANTS OF FOOD INSECURITY	26
2.4.1 SOCIAL FACTORS.....	26
2.4.2 PHYSICAL FACTORS.....	32
2.4.3 ECONOMIC FACTORS	36
2.4.4 GOVERNMENT POLICIES	39
2.4.5 HIV/AIDS.....	45
2.5 EFFECTS OF FOOD INSECURITY ON PRIMARY SCHOOL CHILDREN	48
2.5.1 ABSENTEEISM	49
2.5.2 PSYCHOLOGICAL AND EMOTIONAL STRESS	49
2.5.3 MENTAL DEVELOPMENT.....	50
2.5.4 HEALTH.....	51
2.5.5 SCHOOL ENGAGEMENT	51
2.6 ADAPTIVE LIVELIHOOD STRATEGIES.....	52
2.7 COPING STRATEGIES	53
2.8 INDIGENOUS KNOWLEDGE SYSTEMS AS AN ADAPTATION STRATEGY.....	54
2.9 SUSTAINABLE DEVELOPMENT GOALS	58
2.9.1THE SUSTAINABLE DEVELOPMENT GOALS AND FOOD SECURITY	58
2.10 SCHOOL SUPPLEMENTARY FEEDING PROGRAMMES	59
2.11.1 REASONS WHY SCHOOL FEEDING PROGRAMMES WORK	65
2.11.2 REASONS ON WHY SCHOOL FEEDING PROGRAMMES DO NOT WORK.....	68
2.12 CONCLUSION	70
 CHAPTER THREE:.....	 72
 RESEARCH DESIGN AND METHODOLOGY	 72
 3.1 INTRODUCTION	 72
3.2 CONTEXT OF THE STUDY.....	72
3.2.1SOCIO-ECONOMIC DEVELOPMENT IN MATOBO DISTRICT	74

3.3 AIM AND OBJECTIVES OF THE STUDY	78
3.4 INTERPRETIVE PARADIGM.....	79
3.5 QUALITATIVE RESEARCH METHODOLOGY	80
3.6 RESEARCH DESIGN: CASE STUDY APPROACH	81
3.7 RESEARCH TOOLS AND DATA GENERATION	82
3.7.1 INTERVIEWS.....	82
INTERVIEW TYPE.....	86
DESCRIPTION	86
3.7.2 FOCUS GROUP DISCUSSION	87
3.7.3 DOCUMENTS.....	89
3.8 SAMPLING	90
3.9 METHOD OF DATA ANALYSIS	92
3.9.1 PRESENTATION OF RESULTS	93
3.10 LIMITATIONS OF THE STUDY	93
3.11 ETHICAL CONSIDERATIONS OF THE STUDY	93
3.11.1 VALIDITY	95
3.11.2 RELIABILITY	96
3.12 CONCLUSION	97
 CHAPTER FOUR:	 98
 FINDINGS	 98
 4.1 INTRODUCTION	 98
4.2 TEACHERS' EXPERIENCES OF FOOD INSECURITY IN MATOBO DISTRICT	98
4.2.1 EXPERIENCES OF THE PSYCHOSOCIAL (SOCIAL AND PSYCHOLOGICAL) EFFECTS OF FOOD INSECURITY AMONGST PRIMARY SCHOOL CHILDREN	98
4.2.2 EXPERIENCES OF THE PHYSICAL AND ACADEMIC PERFORMANCE EFFECTS OF FOOD INSECURITY AMONGST PRIMARY SCHOOL CHILDREN	100
<i>NON-PARTICIPATION IN EXTRACURRICULAR ACTIVITIES</i>	<i>108</i>
<i>QUANTITY AND QUALITY OF MEALS FOR OLDER SCHOOL LEARNERS</i>	<i>109</i>
4.2.3 EXPERIENCES OF THE TIME-SCALE EFFECTS OF FOOD INSECURITY ON SCHOOL CHILDREN	110
4.3 THE DETERMINANTS OF FOOD INSECURITY IN MATOBO DISTRICT	112
4.3.1 SOCIAL DETERMINANTS.....	112
4.3.2 ECONOMIC DETERMINANTS	115
4.3.3 ENVIRONMENTAL DETERMINANTS	118

4.4 THE STRATEGIES TO FOOD SECURITY IN MATOBO	120
4.4.1 TEMPORARY JOBS STRATEGY	122
4.4.2 SUPPLEMENTARY FEEDING STRATEGY IN MATOBO DISTRICT	122
4.5 CHALLENGES IN IMPLEMENTING THE STRATEGIES TO FOOD SECURITY	127
4.6 CONCLUSION	132
 CHAPTER FIVE:	 134
 DISCUSSION OF FINDINGS	 134
 5.1 INTRODUCTION	 134
5.2 TEACHERS' EXPERIENCES OF FOOD INSECURITY IN MATOBO DISTRICT	134
5.2.1 PSYCHOSOCIAL EFFECTS OF FOOD INSECURITY AMONGST PRIMARY SCHOOL CHILDREN	134
5.2.2 PHYSICAL EFFECTS OF FOOD INSECURITY AMONGST PRIMARY SCHOOL CHILDREN	136
5.2.3 NON-PARTICIPATION IN EXTRA-CURRICULAR ACTIVITIES	138
5.2.4 ONE MEAL A DAY IS INSUFFICIENT FOR SECONDARY SCHOOL LEARNERS	139
5.2.5 TIME-SCALE EFFECTS OF FOOD INSECURITY ON LEARNERS	139
5.2.6 TYPES OF FOOD BROUGHT BY CHILDREN TO SCHOOL	141
5.3 DETERMINANTS OF FOOD SECURITY IN MATOBO DISTRICT	142
5.3.1 SOCIAL DETERMINANTS	142
5.3.2 ECONOMIC AND ENVIRONMENTAL DETERMINANTS	146
5.4 SOLUTIONS TO FOOD INSECURITY	151
5.4.1 TEMPORARY JOBS	151
5.4.2 SUPPLEMENTARY FEEDING PROGRAMMES IN MATOBO DISTRICT	152
5.5 RECOMMENDED SUPPLEMENTARY FEEDING PROGRAMME FOR MATOBO DISTRICT	153
5.6 CONCLUSION	155
 CHAPTER SIX:	 157
 SIGNIFICANT THEORETICAL INSIGHTS	 157
 6.1 INTRODUCTION	 157
6.2.1 PSYCHOSOCIAL SIGNS OF FOOD INSECURITY	157
6.2.2 PHYSICAL SIGNS OF FOOD INSECURITY AMONGST PRIMARY SCHOOL CHILDREN	158
6.2.3 COGNITIVE SIGNS OF FOOD INSECURITY AMONGST PRIMARY SCHOOL CHILDREN	159
6.4 THEORETICAL INSIGHTS ON SCHOOL SUPPLEMENTARY FEEDING PROGRAMMES IN MATOBO DISTRICT	163

6.5 AVENUES FOR FUTURE RESEARCH	164
6.6 CONCLUSIONS AND RECOMMENDATIONS	165
6.6.1 CONCLUSIONS	165
6.6.2 RECOMMENDATIONS.....	167
REFERENCES.....	168
YIN, R. K. (2014). <i>CASE STUDY RESEARCH DESIGN AND METHODS</i>. (5TH ED.). THOUSAND OAKS, CA: SAGE.	191
APPENDIX A: ETHICAL CLEARANCE LETTER.....	192
APPENDIX B: CLEARANCE LETTER FROM THE PROVINCIAL EDUCATION DIRECTOR	193
APPENDIX C: OBSERVATION SCHEDULE	195
APPENDIX D: AN INTERVIEW SCHEDULE FOR ADMINISTRATORS.....	197
APPENDIX E: AN INTERVIEW SCHEDULE FOR TEACHERS	200
APPENDIX F: FOCUS GROUP DISCUSSION FOR TEACHERS.....	203
APPENDIX G: FOCUS GROUP DISCUSSION FOR PARENTS	205
APPENDIX H: LETTER OF CONSENT FOR THE SCHOOL ADMINISTRATORS.....	208
APPENDIX I: LETTER OF CONSENT FOR THE PARTICIPATING TEACHER	210
APPENDIX J: LETTER OF CONSENT FOR THE PARTICIPATING PARENT	212

List of Figures

Figure 1.1 Location of Matobo District in Southwestern Zimbabwe	11
Figure 2.1 Pillars of food security.....	20
Figure 2.2 Drivers of food insecurity.....	76
Figure 2.3 Four-tier strategy for implementing the school meals Planner	78
Figure 2.4 The impact theory of school feeding on agriculture, education and health.....	78
Figure 2.5 The impacts of school feeding programmes.....	98
Figure 3.1 Location of Matobo District in Southwestern Zimbabwe	76
Figure 6.1 Agroforestry	98

List of Tables

Table 2.1: scientific evidence on the impact of school feeding activities	54
Table 3.1: Research imperatives and strategies used in the study	78
Table 3.2: Types of interviews.....	67
Table 3.3: Research imperatives and strategies used in the study	Error! Bookmark not defined. 97
Table 4.1: Learners' marks	90
Table 4.2: Adaptive livelihood strategies adopted in Matobo district	97

List of acronyms

The following are acronyms as used in this thesis

AIDS	- Acquired immune deficiency syndrome or acquired immunodeficiency syndrome
DRC	- Democratic Republic of Congo
ESAP	- Economic and Structural Adjustment Programme
FAO	- Food and Agriculture Organization
FMV	- Fair market value
FTLRP	- Zimbabwe's Fast-Track Land Reform Programme
GDP	- Gross domestic product
HIV	- Human immunodeficiency virus
HIV/AIDS	- Human immunodeficiency virus infection and acquired immune deficiency syndrome
IKS	- Indigenous knowledge systems
IMF	- International Monetary Fund
IPCC	- Intergovernmental Panel on Climate Change
IQ	- Intelligence quotient
LCDs	- Less Developing Countries
MDC	- Movement for Democratic Change
MDMS	- Midday Meal Scheme
NSLP	- National School Lunch Programme

NTFPs	- Non-timber forest products
PLHIV	- People Living with HIV
SBP	- School breakfast programme
SDG	- Sustainable Development Goals
SSFP	- School Supplementary Feeding Programme
UN	- United Nations
UNDP	- United Nations Development Programme
USAID	- United States Agency for International Development
WFP	- World Food Programme
ZANU	- Zimbabwe African National Union
ZANU-PF	- Zimbabwe African National Union- Patriotic Front
ZAPU	- Zimbabwe African People's Union
ZIMSTAT	- Zimbabwe National Statistics Agency

CHAPTER ONE:

BACKGROUND TO THE STUDY

1.1 Introduction

While the capacity and resources in the world are sufficient to ensure adequate and nutritious food for everyone, household food security is still a challenge for people worldwide, especially those in developing countries (FAOSTAT, 2011, cited in Ignowski, 2012; Sharma et al., 2016). The total number of undernourished people in the world is estimated to be 925 million and developing countries account for 98 percent of the world's undernourished people (FAO, 2010 cited in Nooghabi et al., 2017). Importantly, sub-Saharan Africa has the highest proportion of undernourished people (FAO, 2010; Tamiru et al., 2017). Studies show that sub-Saharan Africa is still home to 30% of the world's extremely poor as well (Manero, 2017; Hetherington., Wiethoelter., Negin & Mor, 2017). The Zimbabwean national poverty headcount is 72 percent and in the rural areas, it is a high of 84 percent (ZIMSTAT, 2013 cited in Manero, 2017). This situation is compounded by rapid population growth and adverse weather conditions, such as above normal temperatures and high frequencies of floods and droughts. "In Zimbabwe many rural communities are vulnerable to drought and, hence, experience hunger and malnutrition from time to time (Gasana *et al.* 2011; Gwimbi 2009). Efforts to reduce this challenge, by development organisations including government, have not yielded much success. The proportion of people suffering from malnutrition, a proxy for food insecurity, has increased (International Food Policy Research Institute [IFPRI] 2000, 2002)."

In Zimbabwe alone, 54 percent (5.5 million) of the population is undernourished (Food Security Information Network, 2017). Stunting, reflecting chronic malnutrition among young children, increased from 29.8 per cent in 1990 to 32 percent (almost one-third of children) in 2012, in a period of twelve years (UNESCO Institute for Statistics, 2013 cited in Zerai, 2017). Southern and western parts of Zimbabwe lie in areas of low rainfall, that is, semiarid areas. Households in these areas are experiencing livelihood deficits and this has led to limited purchasing power

forcing people to encounter challenges in accessing adequate food in markets (FEWS NET, 2014). Food deficits in Matobo district, the case study area for this present study, is attributed to lower crop production potential and very poor households which cannot access food from the local market (FEWS NET, 2014; Zerai, 2017). Very poor households' access to maize meal and maize grain through market purchases is constrained by a significant rise in prices, especially because of the limited income earned by households (FEWS NET, 2014).

1.1.1 Food security and food insecurity

The definition of food security agreed upon at the World Food Summit in 1996 is that it exists “when all people, at all times, have physical and economic access to sufficient, safe and nutritious food preferences for a healthy and active life”(FAO, 1996 cited in Sharma et al, 2016, p. 20). Food security also hinges on the utilization by all people at all times of sufficient nutrients for a productive and healthy life, and this implies that education, and health care are important instruments for food security (Tweeten, 1999; Tamiru et al, 2017). On the other hand, food insecurity is a situation “where individuals have inadequate access to the resources that are necessary for a nutritious diet” (FAO, 2015 cited by Burgess and Shier, 2016, p. 1). Food insecurity, is also defined as “limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways” (Chang et al, 2014, p. 233). With reference to the aforementioned definition by Chang et al (2014) food insecurity is experienced when there is uncertainty about future food availability and access to food, insufficiency in the amount and kind of food required for a healthy lifestyle, or the need to use socially unacceptable ways to acquire food (Spies et al., 2014). The most recent definition of food insecurity by FAO (as cited in Burgess and Shier, 2016) stated above will drive this study.

Studies have shown that sub-Saharan Africa is the only region of the world in which chronic food insecurity and threats of famine remain endemic, for most of the population and the number of malnourished people is steadily increasing (Devereux & Maxwell 2001; Rukuni, 2002 cited in Baro & Deubel, 2006; Sharma et al., 2016). In the context of Zimbabwe, USAID (2014) explains that a population is food insecure if they need more than three months of food assistance per year. Food insecurity leads to child malnutrition, which is one of the most harmful outcomes of

food insecurity and is the solitary leading cause of disease worldwide (Pongou et al., 2006; Legwegoh and Fraser, 2015). Accessibility to food, is viewed as the major constraint to food security as many people lack the required buying power due to poverty (Tweeten, 1999; Chitiyo, 2014). This means that alleviating food insecurity depends on the eradication of poverty through economic development. Tweeten (1999) earlier asserted that economic development was largely responsible for the 158 million reduction in numbers of undernourished people in East, South and Southeast Asia from the periods 1979 – 1981 and 1990 – 1992.

Poverty eradication does not depend on economic development alone. Boidin (2017) argued that holistic development should be economically, socially and environmentally sustainable as highlighted by the Sustainable Development Goals (SDGs). Resources such as water, land and materials, that necessitate development are finite, therefore, they should be used in a sustainable manner since they also support vital ecosystem services (Weitz et al., 2014). SDG 2 focuses on food by seeking to end hunger, achieve food security and improved nutrition and promote sustainable agriculture (Brooks, 2016). This is only possible when resources such as water and land are used sustainably and when there is social inclusion, that is, an equity agenda. An equity agenda focuses on prioritizing the vulnerable population (women and children) and vulnerable food and farming systems (FAO, 2014).

1.1.2 Determinants of a growing economic recession in Zimbabwe

Zimbabwe once had a thriving economy exporting maize to neighbouring countries, however, in the course of a few years it has turned into a country facing recurrent food shortages (Andersson, 2007). Iliffe in Andersson (2007, p. 13) pointed out that the 1960 drought marked ‘a new stage in the history of food shortage in Zimbabwe.’ Research shows that from 1960 onwards more people needed direct government relief, especially among the poor (Andersson, 2007; Mlambo, 2017). Most areas in Southwestern Zimbabwe (Matobo district, the case study area is located here) are on predominantly sandy soils, which are inherently poor for crop production because of poor nutrient availability and low nutrient and water retention capacity (Andersson, 2007; Makate et al, 2016). Most of the areas have soils that are prone to degradation. Also, according to Mabhena (2014) smallholder maize production has become more vulnerable to rainfall variability not only because of its expansion into lower rainfall areas, but also because of the nature of the soils in

these areas. In the late 1986, the government of Zimbabwe introduced a ‘two-tier’ price for maize, where smaller, less productive farmers were paid more for maize than larger farmers, and this had detrimental results because commercial farmers then resorted to growing less maize and this sharply increased food insecurity (Richardson, 2007).

Later, Zimbabwe’s adoption of structural adjustment policies in 1991, led to high input costs among smallholder farmers. Economic Structural Adjustment Programmes (ESAP) “led to the closure of many factories, massive retrenchment, declining real wages, skyrocketing consumer prices, and a decline in the formal economy” (Tawodzera, 2014, p. 208). ESAP is detailed further in section 3.2.1.c. Therefore, the emerging crisis in Zimbabwe’s wage labour sector further undermined smallholders’ production capacity and rural families’ resilience to adverse weather conditions. Destitution resulting from structural adjustment policies which increased food insecurity by eroding the purchasing power of large sections of the population (Chattopadhyay, 2000; Tawodzera. 2014). Between 1991 and 1996, the price of food more than trebled in Zimbabwe and unemployment shot up from 32% in 1990 to 44% in 1993 (IMF, 1997 cited in Chattopadhyay, 2000; Magure, 2015; Phimister & Pilosof, 2017). “The government estimated the unemployment rate at 11 percent by taking into account the burgeoning informal sector. That is, of all those employed, over 90 percent were in the informal sector” (Njaya, 2015, p. 103). This implies that currently formal employment rate is 10% on average.

The fast track land reform of 2000 also worsened food insecurity in the country. Since 2001, Zimbabwe have faced severe and persistent food shortages for six consecutive years, something that never happened before in its history (Tawodzera, 2014). Research shows that there was a steep slide in commercial food production after the land reform process began in 2000, for example, maize production in 2007 was one million tonnes short of the nation’s annual requirement of 1.5 million tonnes (Richardson, 2007; Mango et al., 2015). The land reform programme displaced almost all of the highly specialized seed production farmers and the seeds, which are being imported, are mostly found to have been produced for climatic conditions and altitudes different from those in Zimbabwe, thus contributing to disappointing yields (Scoones, 2015). Therefore, food security for consumers is only guaranteed when they have sufficient income (exchange entitlements) to purchase available grain, or they have access to it as a result

of owning the some of the produce (endowment entitlements, which I later elaborate on)(Sen, 1981 cited in Chattopadhyay, 2000). In Zimbabwe, these entitlements have been eroded.

Tawodzera (as cited in Bruce et al., 2012) states that approximately 75 per cent of communal lands in Zimbabwe are located in agro-ecological regions 1V and V which are characterized by low annual rainfall, namely an average of 450mm – 500mm per annum. Most of these areas experience severe dry spells during the rainy season leading to plant moisture stress. Matobo district (the case study area of this present study) in South western Zimbabwe lies in region 1V where droughts have become more prevalent rendering most households vulnerable to food insecurity. Vulnerability is usually portrayed in terms of susceptibility to harm from exposure to stress associated with environmental and social change and from the absence of a capacity to adapt (Adger, 2006 cited in Bogale, 2012, p. 583). The most vulnerable households to food insecurity are those with poor entitlement to incomes, resources and assets, namely: single parent women, children, the elderly, the unemployed, landless and HIV-infected people (Hendricks, 2002; Waldron et al., 2017). Therefore, households, which have lost entitlements, are found to be highly vulnerable to food insecurity.

Vulnerability to food insecurity is aggravated by a significant proportion of the households in Matobo district which are not well endowed with productive resources, that is land, animal draft power (oxen), and working capital for purchasing of inputs such as fertilizers, improved seeds, draft power and transport services. For example, up to 40 per cent of households do not have adequate access to animal draft power (oxen) (Moyo et al., 2017). Vulnerable households are known to attempt to resist shocks in multiple ways by: selling assets (which are very difficult to rebuild), reducing food consumption and cutting down on health and education expenditures (FAO, 2010; Murisa, 2016).

1.1.3 Effects of food insecurity on children

Various research findings reveal that malnourished children are more burdened by illness, have reduced social skills, have completed less grades in school and have lower intelligent quotient (IQ) scores (Ignowski, 2012; Munro, 2015; Tamiru & Belachew, 2017). This implies that food insecurity leads to undesirable outcomes in children's development such as compromised social

skills and academic performance. Food insecure children also exhibit higher levels of aggressive, destructive, withdrawn, and distressed behaviours (Reid, 2000; Gelli & Suwa, 2014). They are more likely to have difficulty with other children and this disturbs their learning to a greater extent as they get suspended from school due to delinquency such as fighting and stealing (Alaimo, Olson & Frongillo, 2001; Spies et al, 2014).

Food insecure children perform lower on academic tests due to poor health status as they experience stomachaches that are more frequent and headaches and these health problems compromise their school attendance (Alaimo, Olson & Frongillo, 2001; Tamiru et al., 2017). Gundersen (2015) further argued that food insecurity is associated with iron deficiency, anemia which leads to poor attentiveness, memory problems, and poor academic performance in the areas of vocabulary, reading and knowledge. Children who are iron-deficient have impaired motor development; they exhibit greater tiredness and retain less information (Gundersen, 2015). Thus food insecurity greatly affects a child's health and it can have a negative impact on academic outcomes because children miss more school days or while attending school, they find it difficult to participate properly in the learning process (Reid, 2000, Tamiru et al., 2017). It is further stated that such children become depressed given that those who are struggling with attention difficulties and negative emotions suffer academically (Ialongo et al., 2001; Spies et al., 2014).

Research findings of a study which was conducted in Ethiopia reveal that food insecurity negatively affects educational attainment through high rates of school absenteeism, with children living in food insecure households being pulled from school to engage in productive activities (Belachew et al., 2011; Tamiru & Belachew, 2017). Furthermore, 'food-insufficient' teenagers are reported to have behavioural problems that are incompatible with school norms, negatively impacting on their educational attainment (Alaimo et al., 2001; Ghattas et al., 2017). Therefore, food insecure children are likely to have a lower educational attainment due to high absenteeism, illness, poor academic performance, academic delays, poor social functioning and behavioural problems (Rose-Jacobs et al., 2008; Gundersen, 2015). It is documented that hungry children start school later, drop out sooner and are also more likely to be absent and learn less while they attend since they are less able to concentrate in school (FAO, 2005; Hanna & Olivia, 2016). It is

against this background that this study will focus on the vulnerability of primary school children to food insecurity in the Matobo district of Zimbabwe.

Food insecurity also elevates levels of adult stress, depression and parental mental health problems (Alaimo, Olson & Frongillo, 2001; Sharma et al., 2016). Studies have shown a significant association between suicidal ideation (frequent thoughts about death or plans about how to kill oneself) and stressful life events (Alaimo, Olson & Frongillo, 2001). Of the few studies on food insecurity that have included measures of suicidal behaviour, associations were found between thoughts of death, desire to die (i.e. thoughts about one's own, death of another person, or death in general and feelings of wanting to die), suicidal ideation and actual attempts of suicide due to food insecurity (Davison et al., 2015).

Parents experiencing food insecurity provide poor quality care and are less responsive to their children leading to a conversation gap and ultimately affecting children's outcomes (Repetti, Taylor & Seeman, 2002; Spies et al., 2014). This is more pronounced in female-headed households as Ali and Vallianatos (2017) state that female-headed households are more likely to experience greater food insecurity at all levels of per capita of household income. The prevalence of food insecurity for households with children is about twice that for households without children (Nord et al., 2006; Tamiru & Belachew, 2017).

1.1.4 School feeding programmes

As a response to food insecurity, countries have adopted strategies of providing lunch to school children so as to reduce the effects of food insecurity. Children in the United States of America receive free or reduced-price lunches through the National School Lunch Programme (NSLP) (Dunifon & Kowaleski-Jones, 2003; Tamiru et al., 2017). It is stated that the aim of the programme is to provide nutritious food to school-age children at no, or a reduced cost and eligibility for free NSLP lunches is limited to families whose incomes are at or below 135 per cent (US\$) of the poverty line (Tamiru et al., 2017). One study found that the Massachusetts school breakfast programme (SBP) is associated with higher children's test scores and lower levels of school tardiness and absences (Meyers et al, 1989 cited in Dunifon & Kowaleski-Jones, 2003; Spies et al., 2014). If participation in the NSLP leads to improved nutritional intake,

participating children may also see improvements in their ability to learn and regulate their behaviour, as well as their overall health (Dunifon & Kowaleski-Jones, 2003; Gundersen, 2015).

In India, a developing country, the Supreme Court ordered in 2001 that all children in drought affected areas must be served a midday meal even during school vacations (Singh et al, 2014). Under the Midday Meal Scheme (MDMS) in India, on every school day, all primary school students in public schools are provided with a cooked meal containing no less than 300 kilocalories and 8 – 12 grams of protein (Singh et al., 2014). A review article by Khera (2006) on MDMS in India indicates that there was a rise in school enrolment, attendance and retention. A study by Afridi (2010) examining the nutritional impact of the programme in India found that the programme is successful. The daily nutrient intake of programme participants increased by 49 per cent to 100 per cent and the programme reduces the daily protein deficiency of participants by 100 per cent and calorie deficiency by almost 30 per cent (Singh et al., 2014).

The Zimbabwean government has similarly, implemented a supplementary feeding scheme in primary schools to boost enrolment levels, attendance and the completion of basic schooling. The scheme is referred to as the School Supplementary Feeding Programme (SSFP). It is a strategy which was implemented for accelerating the achievement of Millennium Development Goal Number 2, seeking to achieve Universal Primary Education by 2015. It was expected that school meals would provide a powerful incentive for school enrolment and attendance (Singh et al., 2014). It is argued that support for school nutrition programmes is appropriate as these programmes may help to ameliorate the negative consequences of food insecurity on children's cognitive and academic outcomes, at least in the school setting (Jyoti et al., 2006; Singh et al., 2014; Tamiru & Belachew, 2017). However, funding limitations are a challenge as resources could not adequately cater for a total of 5 300 primary schools (Dokora, 2014) curtailing the success of this programme.

1.2 Research problem and rationale

Household food insecurity has experienced a precipitous rise amongst the low income population who are more vulnerable to the health and environmental risks posed by climate change and socio-economic factors (Nord et al., 2006; Chagonda, 2016). This has hastened nutrition

problems and poor health issues amongst children due to increased hunger(Mulu & Mengistie, 2017). The study, therefore, seeks to explore children's vulnerability to food insecurity in the primary schools of south western Zimbabwe through the lens of teachers and parents. I selected specifically Matobo district in Zimbabwe. The study problem is formulated as 'The vulnerability of primary school children to food insecurity in south western Zimbabwe.'

1.3 Aim of the study

The main aim of the study is to explore children's vulnerability to food insecurity in primary schools of south western Zimbabwe through the lens of their teachers and parents. The study aims to ascertain from teachers and parents, the nature of children's vulnerability to food insecurity in Matobo district, Zimbabwe.

1.4 Objectives of the study

The main objectives of this study were as follows:

1. To explore teachers' experiences of food insecurity amongst primary school children in Matobo.
2. To identify the reasons for food insecurity amongst primary school children in Matobo.
3. To identify solutions to food insecurity amongst primary school children in Matobo.

1.5 Critical research questions

Specifically the study sought answers to the following critical research questions:

1. What are teachers' experiences of food insecurity amongst primary school children in Matobo?
2. Why are primary school children experiencing food insecurity in Matobo?
3. How can food insecurity amongst primary school children be addressed in Matobo?

1.6 Significance of the study

There is a plethora of studies on food insecurity in rural and urban areas in general but few studies have focused on children's vulnerability to food insecurity in Zimbabwe. The majority of research has been undertaken in the United States or Canada- in developed contexts; these

studies may not be generalisable to other countries due to differences in their wealth distributions and health and welfare systems. It was important to carry out this study to inform policy makers on issues to be addressed when trying to respond to food insecurity coupled with children's learning in Matobo, Zimbabwe. The study was carried out in south western Zimbabwe because the area is prone to droughts and economic activities are minimum due to a shortage of water. The area loses most of its economically active population to neighbouring countries such as Botswana and South Africa. Low rainfall has led to the loss of people's livelihoods in south western Zimbabwe. South western Zimbabwe was greatly affected by a civil war soon after independence between 1983 and 1987. Soon after independence in 1980 in Zimbabwe there was an ethnic civil war and thousands of people were massacred and agricultural productivity was highly affected (Muvingi, 2008; Zerai, 2017). Thebe (2011, p. 653) noted that "alongside state repression, resource allocation remained skewed against Ndebele regions (south western) and people felt abandoned and marginalized by the state." Development in the region is very low and the nearest city, Bulawayo, has reindustrialized leading to high unemployment. Most households are now vulnerable to food insecurity and children are greatly affected. Thus, the findings of the study can assist in ascertaining a greater understanding about the effects of food insecurity on the cognitive and social development of primary school children in Matobo, southwestern Zimbabwe, as well as advance ways in which the government and relevant stakeholders can intervene and craft sustainable feeding programmes in schools.

1.7 Why Matobo District of Zimbabwe?

The study was carried out in Matobo district, in Matabeleland South province of Zimbabwe. Matobo is situated in agro-ecological region IV. The average annual temperature is 19.9 °C and precipitation averages 457 mm. The area experiences a semi-arid climate as it is subject to periodic seasonal droughts and severe dry spells during the rainy season (Meteorological Services Department, 2007). The rainy season occurs from November to March. Most of the areas in the district have wetlands, which sustain community gardens during the dry season. Vegetation is dominated by *Acacia fleckii*, commonly known as black thorn; mopane (*Colophospermum mopane*) and *Cactus spp.*, a dry land plant species (Ndhlovu, 2009). There are 72 primary schools in Matobo district. The study was carried out in Wards 16 and 17 of Matobo

district. Figure 1 (not drawn to scale) shows the location of Matobo district and Wards 16 and 17. Six primary schools were purposively sampled for convenience.

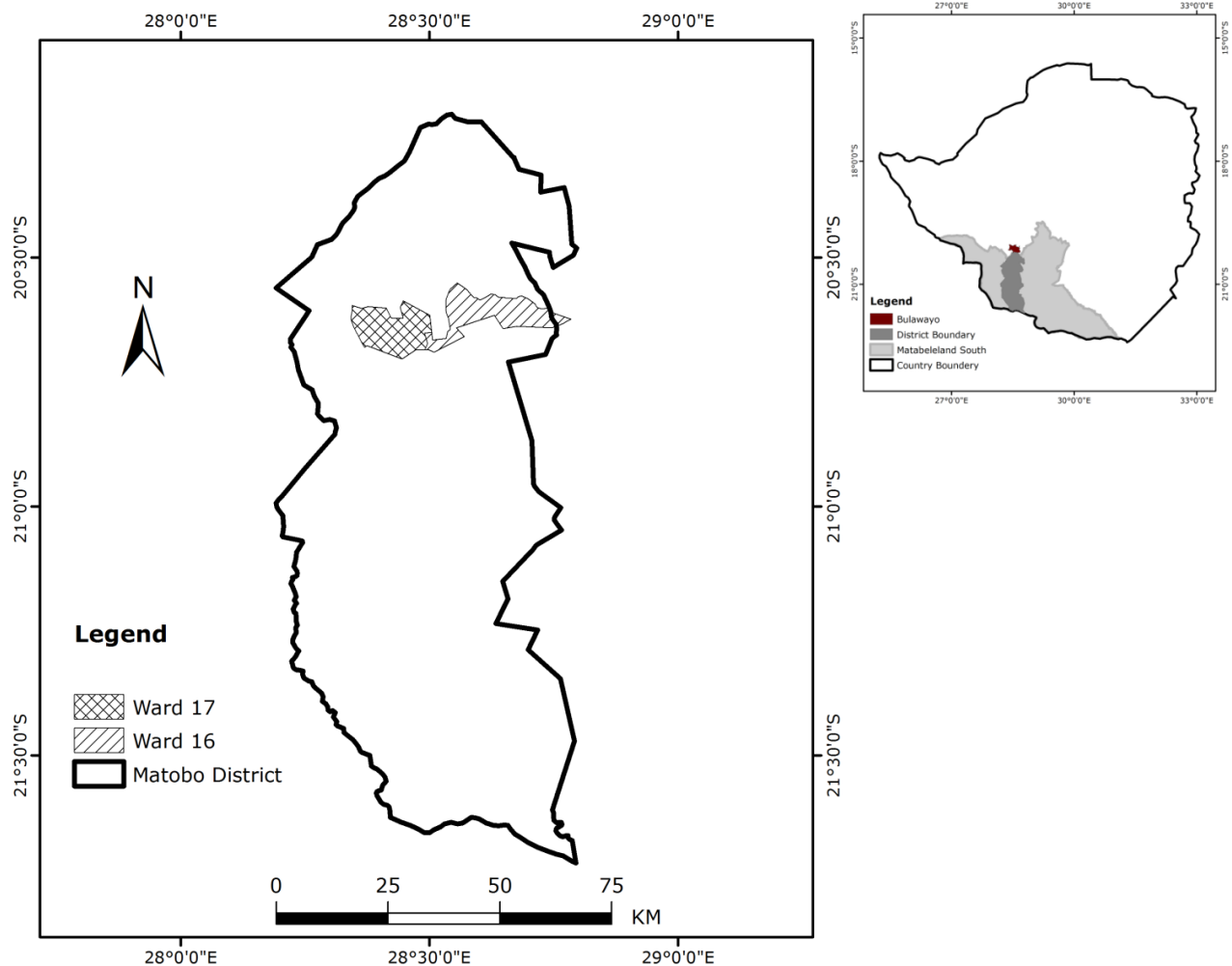


Figure 1.1 Location of Matobo District in Southwestern Zimbabwe

The phenomenon that I am exploring is that of food insecurity and the study explores this phenomenon amongst primary school learners in the Matobo district of Zimbabwe, where food insecurity is known to be an environmental challenge given high rainfall variability.

1.8 Theoretical and analytical framing for the study

The framework for this study is based on Amartya Sen's (1981) 'entitlement approach' that food insecurity is a result of people not having enough command over food. Amartya Sen's entitlement approach reduced legal sources of food into four categories: "production-based entitlement" (growing food), "trade-based entitlement" (buying food), "own-labour entitlement" (working for food) and "inheritance and transfer entitlement" (being given food by others) and individuals face food insecurity when their full entitlement set does not provide them with adequate food for subsistence (Devereux, 2001). According to Nooghabi et al (2017) food security is contingent on three parameters – availability, accessibility and affordability. Availability and accessibility relate to production and distribution of food. Production relies on climatic conditions, soil fertility, availability of seeds and fertilizers whereas distribution depends on communication lines such as roads and weather conditions.

Affordability is linked to Amartya Sen's concepts of endowment and 'exchange entitlements', that is, the resources at one's disposal that determines one's capacity to buy food (Krishnaraj, 2005). The ability to buy food hinges on one's resources that come from assets such as land, equipment, animals and intangibles such as knowledge and skill, labour power and sources of income. Households become vulnerable to food insecurity when they lose their entitlements. Food insecurity results when people lose their resources such as land, equipment, animals and intangibles such as knowledge and skill, labour power and sources of income. People become vulnerable to food insecurity when they lose their stock of entitlements. Loss of entitlements renders households susceptible to droughts and an inability to buy food thereby leading to food insecurity and this causes harm to the children. Children exposed to food insecurity perform

poorly inschool due to their poor health status which compromises their school attendance as previously discussed (Alaimo, Olson & Frongillo, 2001; Tamiru et al, 2017).

The concept of entitlements has shifted the analytic focus of research on famines from food distribution to access to food. It highlights how hunger is not experienced equally at a global, national, regional, community or even household level (Nooghabi et al., 2017). Households that have fewer entitlements tend to experience food insecurity. Households with limited access to adequate land holdings, fertile soils, adequate labour and higher wages are vulnerable to food insecurity. Thus, food insecurity which is experienced by many smallholder farmers is due to a lack of entitlements; namely land, labour, capital, soil fertility and wages (Kerr, 2005, p. 63). During off-season time, many households run vegetable gardens, however, for them to have these gardens they need entitlements such as land, water, labour and sometimes cash for purchasing inputs like seeds and fertiliser.

Ownership of entitlements ensures food security. When there is diminished aggregate production of food, only a minority of the population is seriously affected and this is a result of entitlement failure (Ansell et al, 2009; Mutami, 2015). The entitlement approach explains food insecurity in terms of a differential command over food (Ansell et al, 2009). According to Sen's observation, food insecurity is the characteristic of some people not having enough food to eat, not the characteristic of there being not enough to eat (Chattopadhyay, 2000; Naz, 2016). Households become vulnerable to food insecurity due to entitlement failure, when a household cannot switch to another way of obtaining food. The advantage of Sen's entitlement framework is that it disaggregates the reasons why a person or group may become vulnerable (Hanazaki et al., 2013).

Ownership of entitlements does not automatically lead to food security. Entitlements should be convertible to food. Rubin (2016) pointed out that large groups are no longer capable of transforming their endowment bundles into food because the income they procure is low and it is steadily losing its real value. Most people do not have work, as unemployment is very high, the informal sector has reached saturation limits and escalating food prices are exposing many people to vulnerability (Rubin, 2016). An individual experiences food insecurity if there is a change in his/her endowment. "For example, alienation of land, or loss of labour power due to ill-health or her/his exchange entitlement mapping (such as fall in wages, rise in food prices, drop in the price of goods he buys and sells), makes it impossible to acquire a commodity bundle

with enough food” (Chattopadhyay, 2000, p. 309). Households that lack entitlements are vulnerable to food insecurity. “The entitlement set is defined as the set of all possible combinations of goods and services (not just the one actually being enjoyed) that a person can legally obtain by using the resources of his endowment set” (Nayak, 2000, p. 60). According to Choudhary (2015) entitlement sets that ensure normal livelihoods with adequate food supplies and cash for other needs indicate a secure household. In addition, “entitlement sets that do not guarantee the minimum needed food and cash for survival in the socio-political-economic environment indicates a fragile and vulnerable household” (Choudhary, 2015, p. 288).

Amartya Sen (1981) has been criticized for an overemphasis on economic market-based causation neglecting other important causes of food insecurity such as politics, historical processes and social disruption (Baro & Deubel, 2006). The militarization theory states that politically unstable societies are food insecure due to the channeling of resources towards the purchasing of weapons at the expense of food. In Zimbabwe, “between 1983-1984, a famine was intentionally created by the fifth brigade in the south western part of the country by means of blockades intended to strangle an uprising by the anti-government ZAPU movement” (de Waal, 1997, cited in Rubin, 2009, p. 635). In southwestern Zimbabwe where ZAPU had its support base, many people were killed by a ZANU sponsored military group known as the fifth brigade which was trained in North Korea. The fifth brigademurdered thousands of civilians and also pursued a policy of withholding food from local areas where the ZAPU movement enjoyed support (Rubin, 2009; Muvingi, 2008).

1.8.1 Unsustainable Policies in Zimbabwe

In 1997, then President Robert Mugabe, gave war veterans a hefty one-time payment of Z\$50, 000 per person (a total of Z\$5 billion), plus a Z\$2, 000 monthly pension (Muvingi, 2008; Zerai, 2017). This systematic asset-stripping shook the country’s economy, however, it assured Mugabe of the war veterans’ long-term support. Studies also show that in 1999, Mugabe took the country into the war in Democratic Republic of Congo (DRC) and by 2000 the country was spending approximately US\$25 million a month on that war and top army brass and the politicians were handsomely rewarded by President Kabila of DRC, when there was no benefit for the country

(Zerai, 2017). From 2000 to 2008 President Mugabe of Zimbabwe again pursued famine-triggering policies where war veterans invaded white-owned farms and the country which was once the breadbasket of Africa became “the land of the empty plate” (de Jager & Musuva, 2016: p. 25). Studies revealed that food was given to the supporters of Robert Mugabe and withheld from his political opponents and international food agencies were refused permission into the country.

In 2005, the government embarked on a clean-up campaign known as ‘Operation Murambatsvina’ (literally, “remove rubbish”) in urban areas. The Zimbabwean army suddenly and violently destroyed the informal settlements and businesses in major cities, leaving thousands homeless and without an income (Primorac, 2007; Zerai, 2017). According to Potts (2006, p. 276) “in July 2005 around 650 000 to 700 000 people had lost either the basis of their livelihoods or their homes, or both.” High unemployment in urban areas stripped rural dwellers of remittances while at the same time, drought and declining production stripped individual urban households of food transfers from rural to urban families and a growing number of rural and urban householders became dependent on food purchased at current market prices (Gwahirisa & Manderson, 2012; Munro, 2015). There was hyper inflation in the country and the prices of imported food rose and supplies dwindled thereby causing food insecurity (Mazzeo, 2011; Chtiyo, 2014). Food was imported because between 2002 and 2009 the agricultural sector recorded a sustained cumulative decline of 85.7 per cent (Magure, 2012). Populations in distressful and protracted emergencies were plunged into extreme poverty and chronic food insecurity, as their resilience was severely eroded (Lokosang, Ramroop & Zewotir, 2016). This shows that war causes entitlements to collapse.

When there is hunger, studies (Baro and Deubel, 2006; Choudhary, 2015) show that many people choose not to consume food rather than to sell their vital assets and most famine mortality is caused by the outbreak of disease and widespread epidemics rather than simple undernutrition. In addition, in times of crisis, households often prioritize safeguarding their present assets or purchasing new ones instead of acting to maintain or increase the levels of food consumption (Corbett, 1988, cited in Baro & Deubel, 2006). It is highlighted by Molnar (1999) that one account of famine in Sudan found that people chose to go hungry to preserve assets and their future livelihoods. According to Keen (as cited in Rubin, 2009), in another context, the

1983-1985 Sudan famine, the Sudanese People's Liberation Army openly acknowledged the obstruction of food as a weapon of war. Food insecurity was a result of political instability in the country, which led to the loss of entitlements.

Another argument which is contrary to Sen's privileging of "entitlement collapse" as the primary cause of famine mortality was presented by de Waal's research on the western Sudan famine of 1985 (Devereux, 2001). During this famine, it was observed that mortality in the very poorest households was not significantly higher than in the others. Therefore, the study concluded that mortality risk was more closely associated with patterns of migration and exposure to new disease vectors than with relative wealth and access to food (Devereux, 2001, p. 251). Deaths during a famine are not a result of poverty or loss of entitlements but an outbreak of epidemics of communicable diseases such as cholera, measles and typhus due to poor water quality, poor sanitation and overcrowding (de Waal, 1990 cited in Devereux, 2001). However, Devereux (2001, p. 251) noted that "people who become exposed to communicable diseases left their villages and migrated in search of relief precisely because they had lost their entitlements to food." Loss of entitlements can thus force people to migrate leading to the outbreak of diseases and then death.

When assets are being disposed, there is an observed hierarchy in which assets that take the form of self-insurance (e.g. jewellery) are liquidated well before productive assets (e.g. livestock, land or tools) (Baro & Deubel, 2006). This implies that some households can have entitlements and be food insecure at the same time. The selling of productive assets is a coping strategy that can be ignored by some households since this strategy leads to impoverishment and social disruption. Social disruption refers to "the alteration, dysfunction or breakdown of social life, often in a community setting caused through natural disasters, massive human displacements, rapid economic, technological and demographic change but also due to controversial policy-making" (Beck, 2016, p123).

1.9 Outline of the chapters of the thesis

This thesis is composed of six chapters. Chapter 1 gives an overview of the study, that is, the statement of the problem and rationale of the study, aim of the study, objectives and critical

research questions. The significance of the study is highlighted and the reasons for the choice of Matobo district as the area to be investigated as well as a brief summary of some of the key theoretical insights which guided the study.

Chapter 2 provides the literature pertaining to the concept of food insecurity, theories of food security and key concepts, the determinants of insecurity in the nation (Zimbabwe) and in the district (Matobo). These are classified as biological, physical, socio-economic and political determinants. The effects of food insecurity on educational outcomes are also explored.

Chapter 3 discusses the methodology employed in the generation of data for the study. It also points out that qualitative research methods were employed, using semi-structured interviews and focus group discussions and also an analysis of school documents. The participants in the study were school administrators, teachers and parents. Also included in this chapter are an explanation of the data gathering and analysis procedures as well as rigour and ethical issues.

Chapter 4 gives an overview of the findings of the study. These include teachers' experiences of food insecurity amongst primary school children in Matobo district, the reasons for food insecurity amongst primary school children and solutions to food insecurity amongst the primary school children with reference to supplementary feeding programmes.

Chapter 5 is a discussion of the findings and its links to the literature reviewed. There is also an in-depth discussion of the determinants of food insecurity, adaptive livelihood strategies and supplementary feeding programmes that are offered.

Chapter 6 presents an outline of the key theoretical insights which emerged from the study after a discussion of the findings together with the available literature.

The next chapter (two) provides a review of the literature pertaining to the study as well as the theoretical underpinnings of the study.

1.10 Conclusion

Chapter 1 gives an overview of the study, that is, the statement of the problem and rationale of the study. The aim of the study, objectives and critical research questions are also presented. The

significance of the study is then highlighted, as well as the reasons for the choice of Matobo district as the case study area. The chapter concluded with an outline of the contents of each of the chapters in the thesis.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL UNDERPINNINGS FOR THE STUDY

2.1 Introduction

This chapter contains a literature review of the study as well as the theoretical underpinnings for the study. It is divided into various sections that focus on the vulnerability to food insecurity in south-western Zimbabwe amongst primary school children. The first section explains the term food insecurity using a number of scholarly definitions. The second section highlights the determinants of food insecurity from a regional perspective (sub-Saharan Africa), national to local level. Factors that necessitate food insecurity are elucidated. The third section focuses on the effects of food insecurity on the educational outcomes of primary school children. The effects of food insecurity on children's school attendance, cognitive development and school engagement are assessed. The last section discusses the contribution of school feeding programmes on the educational achievement of learners. This section examines the role of feeding programmes on learners' school engagement.

2.2 Food systems

Food systems are defined as “a set of interactions between and within the biogeophysical and human environments which results in the production, processing, distribution, preparation and consumption of food” (Sandhu, 2014, p. 368). There is an interaction between the two environments that results in food availability, accessibility, stability and utilisation, and these components constitute food security. At the World Food Summit in 1996 it was agreed that “food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for a healthy and active life” (Burgess & Shier, 2016, p. 15). The availability of food resources, access to those resources, sufficient consumption of food and appropriate utilisation in a sanitary and nutritious manner constitute the four key elements that jointly comprise food security (Hussein, 2002 cited in Baro & Deubel, 2006; Connolly-Boutin & Smit, 2016). When one of the elements is missing, food security cannot be assured. A balance of the four elements leads to food security and these elements are generally referred to as the pillars of food security. They are graphically shown in figure 2.1 below.

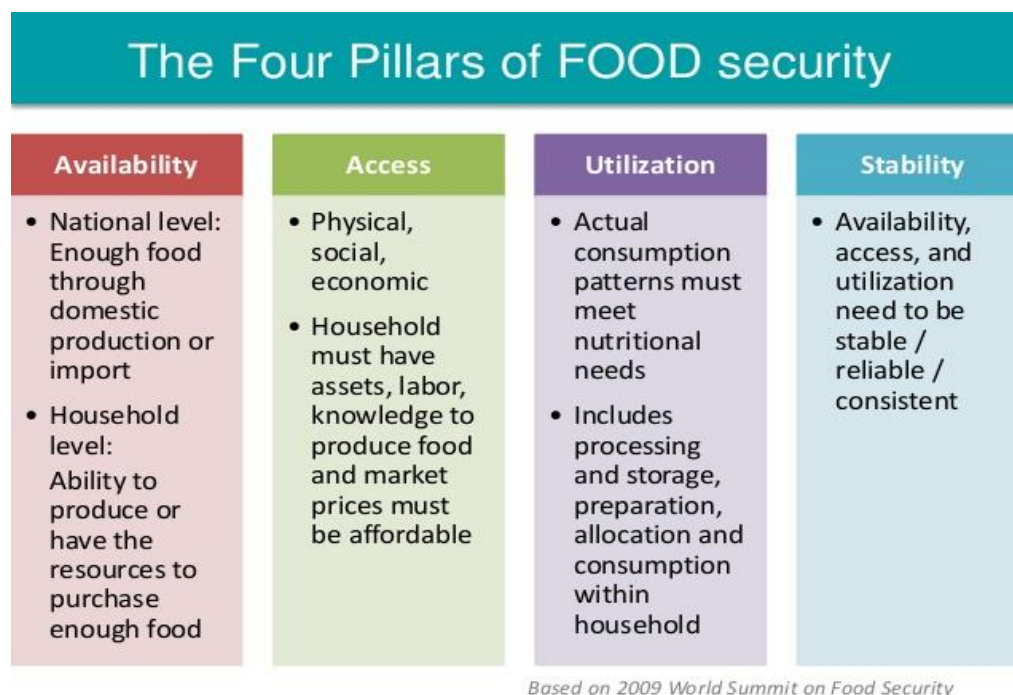


Figure 1.1 Pillars of food security (source: Bohn, 2016, p. 67).

Food security is diminished when food systems are stressed by factors such as climate change, conflicts, government policies and HIV/AIDS (Gregory, Ingram & Brklacich, 2005). Also, it is affected when there is a combination of environmental stress and societal capacity to cope with, and/or recover from environmental change, coupled with the degree of exposure to stress (Gregory, Ingram & Brklacich, 2005; Nooghabi et al., 2017). It is argued by these authors that when food systems are stressed by these factors, food insecurity is experienced.

When individuals and communities are exposed to natural and man-made stresses they become vulnerable to food insecurity. Vulnerability refers to exposure to contingencies and stress, and the difficulty in coping with them (Connolly-Boutin & Smit, 2016). It is evident that poverty increases vulnerability thereby exposing households to food insecurity. Connolly-Boutin & Smit (2016) stated that vulnerability should be seen as the risk that the household's entitlements would fail to buffer them against hunger, famine, dislocation or other losses. Poor households lack basic entitlements and they are thus highly vulnerable to food insecurity.

Tamiru et al. (2016) assert that household food insecurity occurs when food is not sufficiently available, cannot be accessed with certainty in socially acceptable ways, or not physiologically utilised. Households are regarded as food insecure if there is a shortage of food leading to family

members skipping some meals, when they use unorthodox methods of getting food and when food is not fully utilised by the body. Some scholars also define food insecurity as limited or uncertain availability or an inability to acquire nutritionally adequate, safe and acceptable foods due to financial resource constraints (Jyoti, Frongillo & Jones, 2005; Legwegoh & Fraser, 2015). Food insecurity is evident when inadequate resources lead to a loss of entitlements. “A household is considered food insecure if it has limited or uncertain physical and economic access to secure sufficient quantities of nutritionally adequate and safe food in socially acceptable ways to allow household members to sustain active and healthy living” (Tamiru & Belachew, 2017, p. 7). It is also asserted that food insecurity is due to “inadequate utilisation of food and this is influenced by nutrition knowledge, beliefs and access to healthcare, water and sanitation services relating to the management of childhood illness and hygiene” (Osei et al., 2010, p. 487).

Food Poverty

Food poverty is a key aspect of food insecurity and it is defined as being “unable to afford or access a sufficient supply of adequate food for a healthy diet” (Chang et al., 2014, p. 510). Loss of entitlements leads to food poverty as households fail to access food. Poverty is a result of development failure in a given region or country as evidenced in sub-Saharan Africa. Therefore, food insecurity is directly linked to the socio-economic development of the geographic area concerned (Manero, 2017). In Zimbabwe, food insecurity is higher in semi-arid rural areas especially in southern and south western Zimbabwe. Studies also show that food insecurity is about twice as prevalent among households with children as it is amongst those without children (Huang, Oshima & Kim, 2010, p. 83).

Hence, food insecurity can consist of 1) a depletion of household food stores, 2) eating unsuitable food, 3) worrying about the food supply, and/or 4) acquiring food in socially unacceptable ways, such as begging or scavenging (Dunifon & Kowaleski-Jones, 2003; Tamiru et al., 2017). When food is inadequate, household members eat fewer meals, they worry about the next meal and they tend to resort to unorthodox means of getting food such as scavenging. It is argued that food insecurity compromises quality and the quantity of food and it could affect children even if it does not occur along with child hunger (Connolly-Boutin & Smit, 2016).

The food system vulnerability as explained above can be reduced in three ways. Firstly, through extensification (altering natural ecosystems to generate products) and intensification (producing more of the desired products per unit area of land already used for agriculture) (Gregory et al., 2005; Ayala & Meier, 2017). Extensification of agriculture into marginal areas can be done through the use of chemical fertilisers, the planting of drought tolerant crops and the use of irrigation schemes. Secondly, food system vulnerability can be reduced by improving food distribution through infrastructural development. Development of communication lines ensures food availability in critical areas thereby leading to food security. Lastly, improving economic access to food reduces food system vulnerability. Studies have indicated that “production prices should motivate producers to produce more; regional specialisation in food production lowers production costs and food prices and improves access to food; economic growth leads to income and employment generation and these facilitate access to food” (Hjelm et al., 2016, p. 283). Without adequate investment in these strategies, as experienced in sub-Saharan Africa, food security cannot be achieved. It has been observed that now most people buy food rather than produce it, therefore, economic growth is fundamental in ensuring food security.

Amartya Sen observed that even in the severe Bengal famine of 1943, food was available but people lacked buying power, prices were excessive and they did not have access to transfers (Tweeten, 1999; Hetherington et al., 2017). Therefore, agricultural extensification and intensification should be done in conjunction with economic growth. It has been observed that food that is available and accessible does not alleviate food insecurity if people do not utilise food properly because of inadequate nutrition education and food preparation, bad habits, eating disorders or poor health, such as intestinal parasites from unsanitary water (Tweeten, 1999; Nooghabi et al., 2017). Food security is thus achieved in a clean environment and when people are educated on proper eating habits. This implies that the focus should also be on water quality, food storage, human disease as well as the social dictates of food preparation and its consumption (Misselhorn et al., 2012; Connolly-Boutin & Smit, 2016).

2.3 Theories of food security

There are six theories of food security evident in the present literature, which include Neo-Malthusian theories, techno-ecological theory, modernization theory, urbanization theory, social stratification and militarization theory.

2.3.1 Neo-Malthusian theories

The Neo-Malthusian theories proclaim that the earth has a carrying capacity and when this carrying capacity is exceeded famine, wars and diseases are experienced. This theory asserts that population grows in a geometric rate and food production increases at an arithmetic rate. The earth is able to feed the population on condition that population growth does not exceed food production. Scanlan (2003, p. 95) highlighted that food security can be maintained only by achieving a sustainable society that meets the needs of the human population without compromising those of future generations, thus balancing human needs with the earth's capacity to meet those needs without doing unrecoverable environmental damage. An unsustainable society is when the carrying capacity of the land is exceeded by population growth and this results in food insecurity due to a depletion of resources. One dominant perspective attributes the causes of food insecurity in Malawi to increasing population, decreases in land availability and decreasing soil fertility (Kerr, 2005). According to Amartya Sen (1981), soil fertility and land are important entitlements especially for rural people. Therefore, the Neo-Malthusian theories advocate for sustainable agricultural practices that meet the needs of the population and conserve the environment. "There are limits to the earth's carrying capacity and as more people make demands on the environment, those limits are rapidly approached" (Scanlan, 2001, p. 258).

2.3.2 Techno-ecological theory

The techno-ecological theory is a reaction to the Neo-Malthusian theories and its proponents are Boserup (1965), Berry and Cline (1979) and Simon (1998). According to the techno-ecological theory, population growth leads to human ingenuity, which increases food production and availability. Population growth enables the development of agricultural adaptation strategies that meet the needs of an expanding population as was experienced during the time of the "Green Revolution" and the spread of new technology to Less Developing Countries (LDCs) where food is needed most (Scanlan, 2003, p. 96). Boserup (1965) long ago, argued that population growth is the 'mother of invention'. This implies that, population growth facilitates the sharing of ideas and people think innovatively to come up with solutions to existing problems. "Techno-ecologists believe that technology and human ingenuity have always adequately confronted existing scarcities and will continue to do so in the future" (Scanlan, 2003, p. 247). Population growth spearheads the emergence of adaptive strategies that enable the population to meet its needs (Lerner, 2018).

Both, the Neo-Malthusian theories and the techno-ecological theory are “concerned with population change occurring in the confines of limited space, therefore, food security can be maintained only through efforts to achieve a sustainable society” (Scanlan, 2001, p. 254). Food production should be environmentally friendly. According to Scanlan (2001, p. 257) “agricultural practices must utilize careful land use strategies to maintain soil fertility, limit soil degradation and conserve natural resources while generating output adequate for demand.” This implies that there is the need for continued investment in agriculture in developing countries to improve food availability (Bongaarts, 1996, cited in Scanlan, 2001).

2.3.3 Modernisation theory

According to the modernization theory, developing countries can achieve economic and social well-being by following the path taken by industrialized countries (Rostow, 1962 cited in Douxchamps et al., 2015). This implies that developed countries should be a model for developing countries. It is advocated that developing countries should “establish modern institutional structures such as a rationalized government, a modern military, urban centres and an educational system that creates a literate, technologically sophisticated population” (Douxchamps et al., 2015, p. 8). It is advanced that this facilitates development and the introduction of new inventions as stated in the techno-ecological theory. Economic growth leads to food security as it increases the buying power of people as a result of employment creation.

2.3.4 Urbanization theory

The central argument of this theory is that “development favours urban areas as economic elites garner political power in the cities and formulate policy to their advantage leaving rural areas undeveloped” (Scanlan, 2003, p. 103). It is argued that this “bias in favour of city areas has created a disparity between country and city with respect to consumption, wage and productivity levels” (Bradshaw, 1987, p. 224). Urban areas are the core regions and rural areas are the periphery regions. All the resources, some coming from the periphery, are channeled towards the development of the core. According to Scanlan (2003, p. 103) “commodity boards purchase agricultural products from farmers at artificially low costs and export it for profit and this practice redistributes wealth from the poor rural sector to the cities.” This assertion is further reinforced by Jones (2010, p. 3) when he states that “rural exports to urban areas are underpriced relative to a market ‘norm’ and goods from urban areas to rural areas are

overpriced.” Rural areas remain underdeveloped and they are engulfed by poverty, which leads to food insecurity. “Those who produce food are the least able to afford it and are the most likely candidates for hunger from the poverty created by urban bias” (Scanlan, 2003, p. 103). Uneven distribution of wealth thus causes underdevelopment, poverty and food insecurity in rural areas.

2.3.5 Social stratification

Society is stratified into various classes and this leads to an uneven distribution of resources causing marginalized groups to be food insecure. Poor people are highly affected by food insecurity as they lack the resources to access food. “Absolute poverty in particular is a primary indicator of food insecurity” (FAO, 1999, cited in Scanlan, 2003, p. 104). Absolute poverty can be defined as “the state in which a subject lacks the means to meet his or her basic needs” (Eskelinen, 2011, p. 243). These basic needs usually include food, water, shelter, basic education, and basic medical care. Most societies in sub-Saharan Africa are patriarchal and women and girls are discriminated against and fail to access food leading to malnutrition and related health problems (Bennett, 1987; Charlton, 1984, cited in Scanlan, 2003). This is referred to as social exclusion poverty, that is, “the relative deprivation of a person (how a person thinks of him/herself in comparison to others) or the person’s lack of access to certain commodities or services common to others” (Laderchi et al., 2003 cited in Kwadzo, 2015, p. 415). “The deprivation of women to productive resources is a major constraint for those women who do undertake farming for the household” (Krishnaraj, 2005, p. 2510). If women had the same access as men to agricultural inputs in the developing world, “farm yields could increase by 20-30 percent, raising total agricultural output by 2.5-4 percent, and potentially lifting 100-150 million people out of poverty” (Misselhorn et al., 2012, p. 10). A study that was conducted in Nepal by Allendorf (2007) revealed that “women with land rights are less likely to have malnourished children and are more likely to participate in household decisions than women without land rights” (Doss, Summerfield & Tsikata, 2014, p. 5).

2.3.6 Militarisation theory

Politically unstable societies are also food insecure due to “misplaced priorities with regard to military expenditures and arms imports that detract from more productive private investment and the acquisition of basic needs spending such as education and health” (Harris, Kelly & Pranawo, 1988, cited in Douxchamps et al., 2015, p. 11). According to this theory, food insecurity is not

due to a loss of entitlements as advocated by Amartya Sen (1981) but it is human-induced through militarization and war. Vulnerable groups such as children, women, ethnic minorities and the poor are greatly affected.

The various theories of food insecurity give us “the general ideas of how people become hungry through a loss of entitlements resulting from a range of events threatening livelihood systems” (Yaro, 2004, p. 31). Households, regions and countries differ in their resource endowments, therefore, solutions to food insecurity will also vary accordingly. A “one size fits all” approach has been tried in the past to overcome food insecurity and it has failed (Yaro, 2004).

2.4 Determinants of food insecurity

Levels of food insecurity have been falling in all developing countries, but rising in sub-Saharan Africa. Food insecurity is no longer viewed as the result of agriculture’s failure to produce sufficient food, but it is rooted in the combinations of political instability, environmental marginality, and economic powerlessness, that is, the failure of livelihood systems to guarantee access to sufficient food at the household level (Baro & Deubel, 2006; Nooghabi et al, 2017). This distinctiveness of sub-Saharan Africa in general and Zimbabwe in particular has no single explanation as is highlighted below. Zimbabwe used to have a thriving economy exporting maize to neighbouring countries but this now has turned, in the course of a few years, into a country facing recurrent food shortages (Andersson, 2007; Mlambo, 2017). Chattopadhyay (2000) and de Jager and Musuva (2016) state that a more plausible explanation for the Zimbabwean situation may be constructed using Sen’s entitlements framework, with the entitlements approach highlighting a number of useful concepts with which to diagnose and analyse food insecurity. These include:

2.4.1 Social factors

Social factors such as gender, age of household head, level of education and culture play an important role in determining the level of food security per given household.

i. Gender

Female-headed households are more vulnerable to food insecurity when compared to male-headed households. The FAO reported that a large number of the world’s poor people are rural

residents where agriculture is the main source of income and rural women have limited access to land and gender inequalities (who is in control of livelihood assets) limit women's food production (Tamiru et al., 2016). Female-headed households are constrained in accessing livelihood assets in patriarchal societies and this leads to inadequate food production. According to Amartya Sen (as cited by Qudrat-I Elahi, 2006) and Ali and Vallianatos (2017) people's command over food is conditional upon what they own and the exchange possibilities available to them. A household that lacks possession of physical and economic assets tends to be vulnerable to food insecurity and this is more pronounced in female-headed households.

Most female-headed households are poor and vulnerable to food insecurity due to less access to resources. Molnar (1999) and Tsikata (2016) asserted that in Zimbabwe a disproportionate share of the food insecure is female due to poverty, discrimination, divorce and longer life expectancy. During the Zimbabwe's Fast-Track Land Reform Programme (FTLRP), as highlighted by the Government's Utete Report, women were a small minority (18 percent) of those who benefited in terms of formal processes of accessing land, such as the offer letter in the A1 resettlements and leases in the A2 resettlements (Mutopo, 2011, p. 1023; Scoones, 2015). (FTLRP is detailed further in section 3.2.1.d). Land is a resource associated with men and unfortunately women are viewed as mere providers of labour. During the FTLRP women received the least resettlement land even though their skills and labour are critical to food production and rural livelihoods (Moyo, 2007 cited in Mutopo, 2011; Chiweshe et al., 2015). Gender discrimination leads to absolute poverty, which is an indicator of food insecurity as highlighted by social stratification theory.

Women spend a large percentage of their income on food purchasing and less is left for the purchase of other assets. Ali and Vallianatos (2017) pointed out that vulnerability and poverty are often inter-related because in both cases the likelihood of exposure to stress is greater among the poor because a large proportion of their resources are spent either on purchasing or producing food. Less is left for the purchase of assets, which can increase their resilience to food insecurity. Poverty, mostly among female-headed households, is a result of overdependence on subsistence farming with limited access to gainful off-farm employment and income-generating activities (Kelkar & Jha, 2016). Most rural households rely on rain-fed subsistence farming, which is very sensitive to droughts. Climate change has increased the frequencies of inter-and intra-seasonal

droughts. Moyo (2007) and Chang et al. (2014) pointed out that raising the incomes of the poor will also be the best strategy for ensuring food security. This strategy is impossible in Zimbabwe at present due to the poor economic performance of the country.

Women contribute much to the resilience of farming systems and of the family, therefore, alleviating their time constraints is an important way to improve household food security, since doing so allows access to new resources and opportunities which are linked to household food security (Molnar, 1999; Kelkar & Jha, 2016). Phimister and Pilosof (2017) concur with the World Bank Report (2003) cited by Mutopo (2011) which highlights that if women have access to and control over land then family livelihood patterns improve because most women-headed households have better management policies in terms of farming practices, marketing of produce and the use of income. This shows that gender inequality is a key challenge to food security as women have less access than men to productive resources (Misselhorn et al., 2012; Sharaunga et al., 2015). Women play a fundamental role in the provision of food security in the family and community as their contribution is visible in all the four pillars of food security¹ (Molnar, 1999). According to Choudhary and Parthasarathy (2007) and Manero (2017) women are found to spend a greater proportion of their additional income on family needs as compared to men, thus making food available and accessible. If women had the same access as men to agricultural inputs in the developing world, farm yields could increase by 20 – 30 percent, raising total agricultural output in developing countries by 2.5 – 4 percent and potentially lifting 100 – 150 million people out of hunger (Misselhorn et al., 2012; Matarira et al., 2014).

According to Lunga and Musururwa (2016, no page number) “gender implications on natural disasters such as droughts are critical to effective disaster risk reduction (DRR) practices that enable communities to be disaster resilient. Enarson (2006) highlighted that although men, women, girls and boys have different needs and vulnerabilities when disasters strike, it is women and children who are mostly negatively affected.” Lunga and Musururwa (2016, no page number) believe that “the inclusion of women can be a positive adjustment to Zimbabwean society’s response to the perceived vulnerability of food insecurity. After all the success of Zimbabwe’s agriculture system over the years is attributed to women’s roles in achieving food

¹Four pillars of food security are availability, accessibility, utilization and stability

production, income and livelihood security objectives in the face of extreme weather conditions such as droughts and floods.”

However, studies have shown that girls tend to be less affected by food insecurity than boys because socially, girls are more actively involved in food preparation and they tend to have greater access to food than boys (Meme et al., 1998; Harris et al., 2014). A survey by the Central Bureau of Statistics showed that “malnutrition is widespread among children in Kenya and is consistently higher among boys than girls” (Meme et al., 1998, p. 339). On the other hand some researchers argue that girls tend to be more vulnerable compared to boys. “Statistically, 77 million children of primary school age, 49% of them in sub-Saharan Africa, are not in school, and 57% of them are girls” (Noack & Pouw, 2015, p. 174). In food insecure households, a higher proportion of girls are more likely to be absent from school compared to boys (Belachew et al., 2011; Spies et al., 2014). Studies have attributed this to social norms in communities that give a low value to female education when resources are scarce. Girls are given more housework responsibility and child care when parents are busy with activities that enable them to access food, and this leads to higher absenteeism amongst girls than boys. One can conclude that more boys tend to be affected by malnutrition than girls whilst more girls are dropouts as they assist their parents in various livelihood activities.

ii. Age of household head

There are contrasting results on the age of the household head as the determinant of food insecurity. The majority of studies confirm that as the age of the household head increases, more experience is gained and there is diversification in production leading to food security in households headed by older people (Dhemba, 2014; Mango et al., 2014). Contrary to this, it has been found that households headed by older people become less productive and rely more on gifts and remittances and they tend to be food insecure (Gebre, 2012, cited in Mango et al., 2014). From these preceding arguments one can conclude that households headed by older people become more productive if older people have enough labour force so that they can combine their experience and human capital resources leading to food security. Households with large pools of labour are likely to be food secure, because they can carry out farming activities on time and plough large tracks of land (Bogale & Shimelis, 2009; Manero, 2017). Also, households headed

by younger heads are economically active and this can lead to food security, although they are less experienced.

iii. Level of education

It has also been reported that households with better-educated heads are more food secure because they are more likely to receive information and use it in their decisions than those with less-learned heads (Mango et al., 2014). It is assumed that households with better-educated heads have good management techniques and they can secure an annual supply of diversified and preferred food (Mango et al., 2014). Children whose mothers attended only primary school were more food insecure than those whose mothers attended tertiary education (Tamiru et al., 2016). Working mothers contribute to total household income and they are aware of nutrition, hygiene and health care. The influence of one's level of education is greatly visible in the third pillar of food security, which is utilisation. Proper food utilisation and nutritional security reflects adequate protein, energy, micronutrient and mineral intake for household members (Choudhary & Parthasarathy, 2007; Tamiru & Belachew, 2017). Food utilisation should be fulfilled for a household to be food secure. Research also shows that in Africa, men and boys have much greater access to education, wage employment and legal status (including land ownership rights), therefore, they tend to be more food secure when compared to women and girls (Paarlberg, 1999; Huang et al., 2017).

The level of maternal education plays a fundamental role in ensuring household food security. The level of education determines food security in any given household. Makoka and Masibo (2015, p. 3) highlighted that:

“Mother's education is associated with better children's health and nutritional outcomes through improving the socioeconomic status of mothers.”

Education enables women to adopt new health beliefs, gain general knowledge, and apply specific knowledge about health and nutritional practices that promote child health. More maternal education is linked with higher household income, which in turn strengthens families' abilities to handle adverse economic or environmental shocks, finance health care needs, and afford more nutritious food (Miller & Rodgers, 2009; Tsikata, 2016). Studies point out that educated women tend to have relatively fewer children and are able to provide care and support

to their children for good nutritional outcomes (Makoka & Masibo, 2015). According to Makoka and Masibo (2015, p. 3) “mothers educated beyond junior secondary school level are therefore more likely to have a higher maternal diagnostic ability of child growth performance and are able to take corrective action to address any cases of child undernutrition.”

It is further highlighted that in southern Africa, women who have studied beyond primary education tend to have an increased command over household resources, enabling them to make significant contributions towards the promotion of their children’s nutrition and health status as they participate in income generating activities (Makoka & Masibo, 2015, p. 6). According to Miller and Rodgers (2009) and Chiweshe et al. (2015) households with more-educated mothers are likely to have more income and assets than those with less-educated mothers, giving them access to sufficient quantities of nutritious foods, clean water, clothing, adequately-ventilated housing, fuel for proper cooking, safe storage of food, personal hygiene items and health services. The provision of nutritious food and a clean environment fulfils all the four pillars of food security. Studies have shown that the threshold level of maternal education for ensuring child food security is beyond the primary school level. On the other hand, less-educated mothers tend to have more children who compete for few and scarce resources and this reduces the children’s dietary intake, decreases their access to medical treatment and increases their exposure to infectious diseases (Miller & Rodgers, 2009; Kelkar & Jha, 2016). This is rampant in developing countries due to poverty and the problem is widespread since more than 121 million school-aged children are still out of school, and two-thirds of them are girls living in rural areas in the most vulnerable regions of the world (Jomaa, McDonnell & Probart, 2011; Ghattas et al., 2017). This implies that the problem of food insecurity will persist as long as girls are not educated. Uneducated girls tend to get married at an early age and women who become pregnant at a younger age have been noted to have inadequate nutritional status, which often leads to poor nutritional status among their children (Gewa & Yandell, 2011; Ali & Vallianatos, 2017).

iv. Culture

Part of the food access problem lies in cultural patterns that perpetuate inequality between men and women (Molnar, 1999; Harris et al., 2014). This is in agreement with the assertion that rural

women in Zimbabwe face exclusion particularly from different political and traditional regimes that control land in spite of their immense contribution to food production (Mutopo, 2011; Lê et al., 2015). Paid off-farm work is another entitlement to which men and women have differential access, thus women have fewer options for earning off-farm cash income due to employer bias, low education and household duties (Kerr, 2005; Donn et al., 2016). Women who earn cash do so through the sales of their own produce from the fields or the sales of wild fruits. Female-headed households tend to be vulnerable to food insecurity due to discrimination. A kin network, which is a type of entitlement, tends to support vulnerable families through the provision of land, labour and cash. However, the negative effects of food insecurity in sub-Saharan Africa have been magnified by an upsurge of complex emergency situations rooted in structural vulnerabilities that limit equitable access to resources (Baro & Deubel, 2006; Sharaunga et al., 2015). Complex emergencies include “domination of government by one political faction, discrimination against minority ethnic or religious groups or against majority groups by ruling minorities, widespread human rights abuses, destruction of infrastructure, diversion of resources away from social services, and general economic collapse leading to civil unrest, violence, and open armed conflict” Toole & Waldman, 1997, p. 285). According to Quesada et al. (2011, p. 342) “structural vulnerability implies forces that constrain decision making and limit life options.” Discrepancies in access to resources expose female-headed households into food insecurity.

2.4.2 Physical factors

It is argued that the harsh tropical climate of sub-Saharan Africa has also exacerbated food insecurity. Declining soil fertility, weather anomalies, a lack of weather forecasting techniques, rugged terrain and poor communication lines have been identified as drivers of household food insecurity in the region (Mango et al., 2014).

i. Soil fertility

The natural resource base of Africa is less suited to productive agriculture as the soils are generally low in fertility, highly weathered and acidic (Paarlberg, 1999; Lê et al., 2015). During

the colonial era, Africans in Zimbabwe were evicted from ‘European land’ into the Communal Areas (Native Reserves). They farmed in marginal areas on predominantly sandy soils which are not suitable for crop production due to poor nutrient availability and low nutrient and water retention capacity (Andersson, 2007; Legwegoh & Fraser, 2015). In communal areas, soils are easily degraded due to high population growth and most smallholder farmers could not apply manure due to a shortage of livestock. Few farmers own sizeable cattle due to a shortage of grazing areas and as the population increases, they cannot use manure, a most important organic matter in the mixed farming systems (Haile, 2005; Megersa et al., 2014). Continued population growth has reduced the sizes of fields and grazing areas thereby leading to low productivity and food insecurity in rural areas. Soil degradation is very high and it has reduced the already poor capacity of the sandy soils to retain nutrients and water (Haile, 2005; Moyo et al., 2017). It is asserted that productivity has continued to plummet due to population growth and land degradation. It is further highlighted that climate change has increased the magnitude and frequencies of droughts; it is known to exacerbate the impact of soil degradation and it leads to a decline in biodiversity (Flora, 2010; Legwegoh & Fraser, 2015).

ii. Climate change and variability

Weather anomalies associated with climate change and variability such as prolonged mid-season and in-season droughts leads to low agricultural productivity especially in rural areas where smallholder farmers rely on rainfed agriculture. However, half of Africa’s land is unsuitable for direct rainfed cultivation because the growing period is too short (Binswanger & Townsend, 2000; Shams et al., 2015). According to the UN World Meteorological Organisation, nine of the 10 hottest years since 1860 occurred since 1990 (Songok, Kipkorir & Mugalavai, 2011; Gautam and Andersen, 2017). These extreme temperatures are due to global warming which is caused by the high concentration of greenhouse gases (carbon dioxide, methane, nitrous oxide) in the atmosphere as a result of the burning of fossil fuels. It has been established that two-thirds of the African continent is prone to high risk droughts, and about 46% of the area has less than seventy-five days of rain in a year, far too little to raise even millet (Paarlberg, 1999; Lewis, 2017). In sub-Saharan Africa climate variability and extreme weather events such as droughts, excessive rains and floods are among the main risks affecting agricultural productivity and hence rural household food security (Haile, 2005; Antle, 2015). In southwestern Zimbabwe, for example, successive droughts have led to crop failure, producing inadequate food to meet the simplest

subsistence needs of rural populations (Gwatirisa & Manderson, 2012; Chagonda, 2016). Semi-arid areas such as southwestern Zimbabwe experience very high temperatures, which leads to the loss of surface water and soil moisture and the depletion of water bodies.

According to the Intergovernmental Panel on Climate Change (IPCC) (as cited by Cramer et al., 2016, p. 171) in many developing countries, “the vulnerability of food insecure people is exacerbated by the impacts of climate change.” Increases in temperature, changes in rainfall patterns and amounts, shifts in growing season length and timing, and increasing frequency and severity of floods and droughts lead to low agricultural productivity (Cramer et al., 2016). Most households are not able to resist these stresses due to a lack of capacity and coping strategies. These effects are highly pronounced in female-headed households as they rely on traditional social networks and social capital than men due to their limited access to economic resources (Lê et al., 2015; Cramer et al., 2016). Studies show that women have lower adaptive capacities than men due to a lack of resources.

iii. Weather forecasting techniques

Rural households possess valuable indigenous knowledge systems that encompass early warning systems, albeit they no longer value them and this has weakened their resilience to climate change. They are now more vulnerable to climate change and variability due to poverty. They lack access to print and electronic media that can inform them on weather forecasts. Wealthier households benefit more than the poor from weather forecasts and subsistence farmers are the most vulnerable to short-lived droughts even if average rains are good (Mertz et al., 2009; Hanna & Oliva, 2016). Without reliable information on the coming rain season, planning becomes a challenge since climate change results in more erratic and irregular rainfall regimes, shorter growing seasons, prolonged intra-seasonal and inter-seasonal dry spells (Songok, Kipkorir & Mugalavai, 2011; Chang et al., 2014). It has been reported that these weather anomalies have devastating effects as they decrease crop production, severely disrupt or destroy livelihood opportunities, increase local food prices and increase household vulnerability to food insecurity (Adger et al., 2003 cited in Songok, Kipkorir & Mugalavai, 2011; Murungweni et al., 2014). Studies show that indigenous food production systems contribute significantly in mitigating against the climate change-induced effects of food and economic insecurity.

iv. Topography

Topography is irregular thereby hindering irrigation projects. An estimate of 4% of cultivated land in Africa is under irrigation and irrigation costs are roughly double those of other continents (Paarlberg, 1999; Moyo et al., 2017). Africa is also prone to a wide variety of pests and diseases that affect crops, livestock and people. In sub-Saharan Africa there are a number of endemic livestock diseases, and human diseases, the most devastating being malaria, tuberculosis, and more recently the devastating AIDS epidemic (Binswanger & Townsend, 2000; Takarinda et al., 2017). The spread of these have been exacerbated by climate change. These impacts undermine all four 'pillars' of food security and it has been estimated that overall agricultural productivity may decline by 9 – 21% by 2050 (Misselhorn et al., 2012; Matarira et al., 2014).

v. Communication lines

Under development in sub-Saharan Africa is a major barrier to food security. In times of crises people are not able to access food aid due to poor communication lines. One of the biggest problems associated with food aid has been the inadequacy of African transportation infrastructure for ensuring reliable and equitable food delivery (Baro & Deubel, 2006; Lê et al., 2015). The road network in Zimbabwe is in a bad state, it has been damaged by the rains. Most of the rural areas are no longer accessible. It is also said that during food crises in Sudan and Ethiopia food relief piled up in capital cities due to a lack of available and reliable transportation to distribute food to remote rural areas (Baro & Deubel., 2006; Manero, 2017). Poor infrastructural development in rural areas also inhibits farmers from getting their produce to markets at a competitive price due to high transport costs; a lack of appropriate storage facilities also contributes to high-post harvest agricultural losses and access to agricultural inputs such as fertiliser and seeds becomes too expensive for farmers to afford (Haile, 2005; Chang et al., 2014). The combination of climate variability, poor infrastructure, economic poverty and low productivity are important challenges for sub-Saharan countries (Mertz et al., 2009; Lê et al., 2015). In addition, many small-scale farmers use degraded land; they are far from services and roads and consequently from extension programmes (Magaña-Lemus et al., 2016).

2.4.3 Economic factors

As ‘African grain production per head’ declined during the colonial era, African families became increasingly dependent on maize purchases for their food security and on the wage labour economy (Andersson, 2007; Tawodzera, 2014). Food accessibility hinges on the availability of resources. Food insecurity is thus a result of entitlement failure, a loss of remittances and it is high in female-headed households.

i. Entitlement failure

Food insecurity affects households that cannot access adequate food due to poverty, irrespective of food availability (Burgess & Shier, 2016). Poverty is a result of a loss of entitlements. The word entitlement implies the possession of ‘legal title’ of something such as land (Qudrat-I Elahi, 2006; Naz, 2016). In the context of poverty and food insecurity the legal sources of food are “production-based entitlement” (growing food), “trade-based entitlement” (buying food), “own-labour entitlement” (working for food) and “inheritance and transfer entitlement” (being given food by others) (Devereux, 2001; Naz, 2016). The losses of these entitlements lead to food insecurity. Sen (as cited in Naz, 2016, p. 16) has stated that food insecurity is also a result of “exchange entitlement decline” (falling wages or livestock prices, rising food prices) as well as by “direct entitlement decline” (loss of food crops to drought). Economic recession leads to a loss of entitlements and it results in food insecurity as people would have lost their purchasing capacity due to falling wages and a loss of jobs.

A loss of entitlements is mostly a result of development impairments and sluggish economic developments in a country and this eventually leads to poor socioeconomic status and food insecurity (Tamiru et al., 2016). Resource endowment and having a source of income enables households to access food, for example, having livestock or a source of income reduces the chances of food insecurity. Resource endowed farmers can sell their livestock during food shortages, they can also get milk and meat or sell them for cash and livestock contributes draft power and this helps the household meet their subsistence, income and nutritional requirements (Bogale & Shimelis, 2009, cited in Mango et al., 2014). Ramsey et al. (2011) and Choudhary (2015) point out that lower levels of income and unemployment are potential predictors of food insecurity.

A loss of entitlements has led to high poverty levels in sub-Saharan Africa. Studies have shown that nearly half (40%) of the total sub-Saharan population of approximately 500 million people live below the international poverty line of one dollar per day and by 2020 the population is projected to increase by 70%, accompanied by a 30% rise in child malnutrition (Baro & Deubel, 2006; Choudhary, 2015). Natural disasters have massive effects on communities where the resource base is poor, where poverty is endemic and the public capacity for prevention is weak (Baro & Deubel, 2006; Tian et al., 2016). It is also evident that rural households fail to embrace the use of fertilisers to improve soil fertility because they do not have economic access to it or the technological ability to exploit its benefits due to poverty (Scanlan, 2001; Sango & Nhamo, 2015). Human adaptability is therefore curtailed by poverty. In addition to this, it has been noted that chemical fertilisers have harmful environmental effects as they disrupt the ecological balance of societies to which they are introduced (Gebrehiwot & van der Veen, 2014). Therefore, the theory of modernization does not always lead to food security because some strategies that were used in other regions are not applicable in sub-Saharan Africa due to their environmental effects and financial implications.

ii. Female-headed households

Female-headed households are greatly affected by a loss of entitlements since they tend to spend more income under their control on food and children's healthcare and education than men (Quisumbing et al., 1995, cited in Cramer et al., 2016). In addition, in female-headed households, women spend more time caring for children and the elderly, collecting water and fuel and cooking and these activities limit their ability to devote a greater share of their time to paid employment (Wiebe, Dawe & Stamoulis, 2011; Ali & Vallianatos, 2017). A shortage of income will lead to food insecurity and an outbreak of diseases such as kwashiorkor among children. Studies show that most people buy food rather than produce it, and when harvests are low people tend to sell off their livestock and assets and migrate in order to finance food purchases. According to scholars Andersson (2007) and Loison (2015) colonial Zimbabwe's political economy had a double effect: it made African's food security increasingly dependent on the wage labour sector, while making their agricultural production increasingly vulnerable to adverse weather conditions. The poor are very vulnerable as they lack financial assets that enable them to access food. The selling of livestock and other productive assets further increases their

vulnerability to future shocks and stresses. Migration increases vulnerability to HIV/AIDS, which leads to a loss of human and financial assets further aggravating food insecurity. When a disaster strikes, the poor and socially disadvantaged suffer the most and are the least equipped to cope with the impact (Clover, 2003; Murungweni et al., 2014). Food thus becomes inaccessible due to the loss of financial assets.

Studies have shown that the population most affected by poverty are children. Children who live in poverty are more likely to struggle academically and to not achieve at the same levels as their middle-and high-income peers (Taylor, 2005, cited in Spies, Morgan & Matsuura, 2014). Learners from poor families have difficulty in carrying a lunchbox to school because of a lack of food available at home and this is due to lack of financial resources (Abrahams et al., 2011; Munro, 2015). Therefore, food insecurity is a result of the poverty of households that do not have the capacity to produce food due to a lack of resources nor can they procure an income to buy it (Yaro, 2004; Magaña-Lemus et al., 2016). A lack of resources leads to a loss of production-based entitlements because families will be failing to produce their own food. A shortage of income is a result of the loss of trade-based entitlements; people would be lacking the means to acquire food at the market and this result in food insecurity. The evidence of a loss of entitlements is the availability of more than enough food supplies, and yet millions go hungry every day (Yaro, 2004). Food availability is not an issue but the problem is due to food accessibility. Most households fail to access food due to poverty and poverty is the result of an unequal distribution of resources. Food insecurity is experienced in households if some change occurs in endowment such as the alienation of land, a loss of labour power, ill health or exchange entitlement (a fall in wages, a rise in food prices, a loss of employment or a drop in the price of foods produced by households) (Yaro, 2004; Parsons, 2010; Motbainor et al., 2016).

iii. Remittances

Remittances represent an alternative source of income and households with access to remittances are more likely to be more food secure than those without this source of income (Mango et al, 2014). Cash remittances from family members in urban areas enable rural households to access food and agricultural inputs, however, increasing unemployment in urban areas has led to a

shortage of remittances leading to food insecurity in rural areas (Gwatirisa & Manderson, 2012; Tawodzera, 2014). This has been greatly experienced in Zimbabwe as from the late 1990s due to successive droughts and hyperinflation leading to company closures.

Agricultural activities are run by women and their husbands working in waged work support these activities by sending remittances, which are then used for accessing inputs. Therefore, farming wives are dependent on the husbands' contributions, that is, women play the role of primary farm worker and household manager, with the husband providing inputs through earnings from wage work (Goebel, 2005; Thow et al., 2016). This implies that the loss of jobs through retrenchments has a huge blow on subsistence farming and female-headed households have higher chances of lacking inputs due to a lack of support from men.

While attention is often focused on increasing food production, most of the world's poor rely on other sources of access to food, including income (which depends on the levels of both employment and wages) and remittances (Wiebe, Dawe & Stamoulis, 2011; Maycock, 2017). These households are greatly affected by price increases as this reduces the purchasing power and it eventually leads to food insecurity. Off-farm employment helps sustain real incomes when agricultural food prices are low but it may increase vulnerability when food prices are high or when these alternative sources of income are adversely affected by economic conditions such as ESAP leading to retrenchments (Wiebe, Dawe & Stamoulis, 2011; Pretorius & Blaauw, 2015).

2.4.4 Government policies

Zimbabwean government policies such as structural adjustment programmes, the fast track land reform programme and strategies such as political patronage have exacerbated the problem of food insecurity in the country.

i. Structural Adjustment Programmes

In 1991, the government adopted an Economic Structural Adjustment Programme (ESAP). This policy was promoted by the Bretton Woods Institutions, which is the World Bank and the International Monetary Fund (IMF). Countries were in a position to get loans on condition that they adopt ESAP. However, inflation has been the most persistent problem bedevilling the Zimbabwean government since the ESAP was put in place (Chattopadhyay, 2000; Mlambo,

2017). Numerous challenges emerged after the adoption of ESAP, for example, between 1991 and 1996 the price of food more than trebled, education and health costs became exorbitant especially for the ordinary Zimbabweans and the country moved from being middle income to low income.

Severe food insecurity was experienced as prices for basic commodities began escalating. Chattopadhyay (2000) and Tawodzera (2014) stated that within the first six months of ESAP the price of grain increased by 60 percent. Most households failed to access food and agricultural inputs due to high unemployment and price increases. This compounded the problem of food insecurity in Zimbabwe. According to Baro and Deubel (2006) and de Jager & Catherine Musuva (2016), vulnerability is a socially constructed phenomenon influenced by institutional and environmental dynamics. Some communities are vulnerable due to the policies that have been adopted by governments. Social stratification leads to social inequalities such as power differences among classes and ethnic groups and the weak become the victims of food insecurity.

ii. Political patronage

It is asserted that the hardships caused by economic restructuring were compounded by a culture of political patronage, where populist measures were implemented at the cost of meaningful reforms (Chattopadhyay, 2000; Chagonda, 2016). In 1997, thousands of Zimbabwean war veterans were granted lump sum payments of Z\$50 000 by the government plus a Z\$2000 a month pension. Then in 1999, the government intervened in the Democratic Republic of Congo (DRC) war using its strained budget. These ventures were very expensive and they adversely affected a weakened fragile economy (Sachikonye, 2003; Heinrich, 2014; Magure, 2015). The majority of Zimbabweans lost their livelihoods and they were plunged into extreme poverty and food insecurity.

In 2000, the Fast-Track Land Reform Programme (FTLRP) was introduced, resulting in the coercive acquisition of about 90 per cent of commercial farms owned by white farmers (Gwatirisa & Manderson, 2012; Phimister & Rory Pilosof, 2017). It is estimated that a total of 11 million hectares, including the best arable land, was transferred from about 4 000 mostly large-scale white commercial farmers to about 300 000 small-scale farmers (Sachikonye, 2003; Zerai, 2017). This programme led the country into its worst state of food insecurity since

independence in 1980. Studies show that up to half of the country's population was vulnerable to hunger and the ruling party used food as a weapon against the opposition. Farm workers lost their jobs and were displaced subjecting them to extreme poverty and food insecurity. Sachikonye (2003) and Chagonda (2016) noted that in 2002 farm workers were in dire need of food because they no longer had any alternative source of income with which to sustain themselves and their children became more vulnerable to under-nutrition because supplementary feeding schemes came to an end. According to Magure (2015) certain groups may be more vulnerable because of deliberate indifference or even victimisation by the government, coupled with the lack of political power of these groups.

The FTLRP failed to achieve some of its objectives, for example reducing poverty and food insecurity, because it was not accompanied by comprehensive programmes of agrarian reform such as access to credit, savings and markets in rural areas (Clover, 2003; Magure, 2015). In addition, Clover (2003, p. 67) further argued that “in Zimbabwe, a failure of governance – both through lack of accountability and an opposition to democratisation – and in particular, the way in which the land reform programme was instrumentalised and implemented, resulted in a severe undermining of the previously robust agricultural economy.” Productivity dropped in most farms due to an incapacity for effective agricultural production. “The 4 000 white-owned commercial farms that were expropriated during the FTLRP are now lying idle and these were often called the back-bone of the economy” (Richardson, 2007, p. 469). Research indicates that at the end of 2002 an estimated 90% of the 300 000 Zimbabweans who were given land by the government lacked farm inputs and some 94% did not have seeds for the upcoming season (Clover, 2003; Magure, 2015). People were just given land on the ticket of being ZANU (PF) supporters at the expense of a capacity to produce. Poor implementation of the FTLRP turned Zimbabwe, which once had a thriving economy exporting maize to neighbouring countries, into a country facing recurrent food shortages (Andersson, 2007; Mabhena, 2014). It has been noted that since 2000, agricultural production in the commercial farming sector for crops such as tobacco, wheat, soyabeans, coffee and sunflower dropped between 25 percent and 70 percent (Richardson, 2007; Murisa, 2016).

iii. The Fast Track Land Reform Programme

It is argued that in the last decade, the economy of Zimbabwe collapsed due to government's misrule, poor fiscal policies, heavy-handed price controls, a huge payout to war veterans in 1998 and the loss of rule of law (Murisa, 2016). The FTLRP was turned into *jambanja* (haywire) after the President changed the Clause 57 on land to disclaim any responsibility for the Zimbabwean state to compensate farmers whose land was taken for redistribution (Cliffe et al., 2011; Magure, 2015). Some politicians used their political muscle to dispossess recipients their land. Cliffe et al. (2011) and Zerai (2017) stated that the process of enforced land grabbing was perpetrated by those who might accurately be described as 'cronies'; indeed political muscle was a requirement for such acquisition. The FTLRP was marred by corruption as politically connected people were given land at the expense of the original beneficiaries. Land was given to prominent elite figures such as civil servants, members of the security forces and ZANU (PF) members by informal and often strong-arm methods (Cliffe et al., 2011; Murisa, 2016). The FTLRP was associated with political patronage and not equitable land redistribution. Investors were scared away and various industrial sectors such as banking, mining, manufacturing and tourism experienced steep declines. It has been asserted that Zimbabwe is a well-endowed country; however, economic activity has deteriorated rapidly due to faulty policies and poor implementation of sound policies. Agricultural activity is low due to high level of uncertainty and risk which restrains people from investing in land and agriculture and this, in turn, reduces resilience of households to political shocks or natural disasters, since their assets are constantly eroded (Korf and Bauer, 2002; Phimister & Pilosof, 2017). Food security in Zimbabwe is thus linked to politics and associated power distributions.

The land reform programme displaced all of the highly specialised seed production farmers (Richardson, 2007; Magure, 2015). The seed production capacity was created over many decades and effectively underpinned the success of the country's farmers by catering to widely differing growing conditions (Zerai, 2017). Studies revealed that the seeds that are being imported are not suitable for the Zimbabwean climate and altitude and this contributes to low agricultural productivity. Richardson (2007) and Pretorius and Blaauw (2015) asserted that with maize production falling dramatically in the devastated commercial sector, this shortfall not only sharply increased food insecurity, but it also destroyed the vital insurance policy that Zimbabwe had during times of erratic rainfall. The fast-track land reform has led to household and national

food insecurity (Murisa, 2016). New small-scale farmers lacked inputs and the capacity for viable agricultural production (Mlambo, 2017).

iv. Failed policies in Zimbabwe

The modernisation theory states that developing countries should follow the path taken by developed countries. This is not always the case, especially with reference to the green revolution. The usage of fertiliser, mechanised equipment, pesticides and irrigation technology exacerbates inequality between the rich and the poor within developing countries and they disrupt the ecological balance of societies to which they are introduced (Scanlan, 2001; Chagonda, 2016). These strategies are too expensive for the poor households; therefore, they will not solve the problem of food insecurity. According to Gregory et al. (2005) and de Jager & Musuva (2016) regional policy decisions do not always convert to successful local implementation especially if distribution services are inadequate, or food preferences are ignored. Policies should be tailor-made for specific areas and all stakeholders should be actively involved in the formulation of these policies. According to Tsikata (2016) without empowerment through participation, policies and practices of service providers or duty bearers, people are unable to claim entitlements, even when resources are available. Integrating indigenous knowledge systems (IKS) with modern scientific techniques in climate forecasting, for example, is a sustainable adaptation strategy for climate change. According to Songkok, Kipkorir and Mugalavai (2011, p. 73) in most rain-fed subsistence production systems in Nandi and Keiyo districts (Kenya), “IKS constitutes an invaluable, diversified, cost-effective and dynamic localised resource that enables them to survive and produce under risks, without exposing themselves to more or shifting towards maladaptation.” This is in support of the technological theory which hinges on human ingenuity as the best agricultural adaptation strategy. Therefore, governments should not ‘copy and paste’ policies as this will not always convert to successful local implementation. It is advanced that faulty policies or poor implantation of sound policy are some of the determinants of food insecurity in Zimbabwe (Molnar, 1999; Mlambo, 2017).

Studies show that irrigation schemes reduce poverty and food insecurity to a greater extent. However, most irrigation schemes in Zimbabwe are malfunctioning because of poor

maintenance. When human systems fail, repair costs for irrigation schemes are much greater, and the ability of a reliable source of water to realise its promise for food security is greatly impaired (Molnar, 1999; Phimister & Pilosof, 2017). Rural areas have remained underdeveloped and most resources are channelled towards urban areas or are lost due to corruption.

Zimbabwe has experienced policy failure after independence as most of the policies have plunged the economy into oblivion leading to severe household food insecurity. In the last decade the country was hard-hit by hyper-inflation which led to the loss of formal employment and many people resorted to employment in the informal sector (Murisa, 2016). However, this option brought further turmoil to Zimbabweans. In May 2005, the government embarked on Operation 'Murambatsvina'/Restore Order. It was implemented in urban areas to enforce by-laws and to stop all forms of illegal activities. When the Operation commenced in May 2005, structures such as household kiosks and small food stalls were classified as illegal because they were not included in approved plans for dwellings or had not been registered (Gwatirisa & Manderson, 2012; Magure, 2015). The government bulldozed and burned vendors' markets, informal market premises and vegetable gardens and by end of the Operation, "approximately 30 000 vendors had lost their livelihoods as their goods and assets were confiscated by the police" (Gwatirisa & Manderson, 2012, p. 105). The livelihoods of the urban poor households were destroyed leading to food insecurity in urban areas and less or no remittances were sent to rural areas and this also resulted in food insecurity in rural areas.

Operation 'Murambatsvina' was implemented when the ZANU (PF) was facing the greatest opposition, since independence, from Movement for Democratic Change (MDC). Some scholars have argued that Operation 'Murambatsvina' was implemented to punish urban dwellers where the MDC had its greatest support. Molnar (1999) and Magure (2015) argued that warring parties lay siege to cities, destroy food supplies, devastate productive capacities, and demolish bridges and other aspects of infrastructure in order to subjugate their opponents. Many people in urban areas lost their livelihoods and this had a ripple effect as it reduced remittances for rural households.

According to Zerai (2017) about 16.7 million people in southern Africa are in need of emergency food aid, and a most dangerous situation is developing in Zimbabwe. Food aid should ideally

preserve livelihoods and assets but government corruption is the major obstruction to food aid distribution because it causes the diversion of food to few individuals and remote villages are rarely served (Baro & Deubel, 2006; Pretorius & Blaauw, 2015). It is further noted that bribery, extortion, insider dealing and cronyism are symptoms of a failed social organisation and this inhibits the functioning of policies intended to prevent food insecurity (Chagonda, 2016). Corruption undermines sound policies that could bolster to food security.

2.4.5 HIV/AIDS

Southern Africa has been hard hit by the scourge of HIV/AIDS. The disease has greatly affected the economically active population. The disease knows no socioeconomic boundaries, however, studies reveal that the majority of People Living with HIV (PLHIV) are from populations already experiencing low dietary quality and quantity (Frega et al., 2010; Sholeye et al., 2017).

i. The nexus of HIV/AIDS and Gender

Research shows that HIV infection and AIDS related deaths are the highest in sub-Saharan Africa, especially in southern Africa. Women are more at risk to HIV infection because of economic dependency on men, unequal access to resources, opportunities and assets, including land (Gillespie & Kadiyala, 2005; Musemwa et al., 2015). It is evident that orphans tend to indulge in unsafe sexual behaviours due to poverty and food insecurity. According to Sholeye et al. (2017) women and girls make up almost 57% of all people infected with HIV in sub-Saharan Africa, where 76% of young people (aged 15 – 24 years) living with HIV are female. HIV/AIDS leads to the loss of the household labour force, skills and assets, thereby increasing the vulnerability of affected households. On the other hand, food insecurity increases the likelihood that people engage in high-risk behaviours, such as seasonal migration (Baro & Deubel, 2006; Chen & Kalichman, 2015). Therefore, the relationship between food insecurity and HIV/AIDS is bi-directional.

Studies reveal that HIV/AIDS had at times thrust households into poverty (Frega et al., 2010; Sholeye et al., 2017). The research carried out by Frega et al. (2010) and Githinji and Crane (2014) reveal that food insecurity is believed to particularly increase sexual risk-taking among women, as they may engage in transactional sex to procure food for themselves and children.

These extreme coping strategies by food insecurity victims expose them to HIV/AIDS, which has dire consequences. It can be concluded that food insecurity can be one of the major catalysts of HIV transmission and vice versa (Frega et al., 2010; Sholeye et al., 2017). Food insecurity can lead to transactional sex and HIV infection. HIV-affected households cope with food insecurity by firstly reducing household meal portion sizes on a daily basis and secondly, the selling of household assets that leads to the eventual breaking down of family livelihoods thereby plunging the household into extreme poverty and food insecurity (Chen & Kalichman, 2014). De Waal and Whiteside (as cited in Hajdu et al., 2009, p. 11) point out that “six southern African countries with HIV prevalence have experienced recurrent severe food shortages, and propose that this is a new type of famine caused by the pandemic.”

Food insecure women fail to access maternal health services due to a lack of financial resources. In Zimbabwe, food insecure women have difficult choices to make between food (and other goods and services) and the costs associated with health care, including transport and fees (McCoy et al., 2015). Findings of a study carried out in Zimbabwe by McCoy et al. (2015) show that, women who reported severe food insecurity were 14% less likely to complete all recommended maternal and infant health services for Prevention of Mother-to-Child HIV Transmission (PMTCT) compared to food secure women. McCoy et al. (2015, p. 3) highlighted several ways in which food insecurity affects women’s use of health services:

“First, food insecurity might result in avoidance or delay of maternal health Services because of its overlap with socioeconomic position and the real or perceived costs of antenatal care (ANC) facility delivery, and/or HIV prevention and care services.”

It is evident from the above that food insecurity exacerbates the health problems for women and children, which further aggravates the problem of food insecurity. The effects also tend to be cyclical. Food insecure women are less likely to adhere to treatments, most likely due to a lack of financial resources.

ii. The nexus of HIV/AIDS and food insecurity

AIDS has been named as the primary cause of contemporary food insecurity in southern Africa because six countries in the region that have experienced recurrent severe food shortages also

have exceptionally high HIV prevalence rates (Ansell et al., 2009; Sholeye et al., 2017). HIV/AIDS worsens food insecurity as it carries a heavy financial burden and it leads to a loss of human capital. Financial resources tend to be channelled towards the purchasing of medicine for HIV patients thereby straining resources for accessing food. Labour constrained households are more vulnerable to food insecurity since they might not be able to make full use of available land and other resources to secure their livelihoods (Takarinda et al., 2017).

AIDS increases household vulnerability through “adverse changes in dependency ratios owing to adult morbidity and mortality; loss of assets and skills owing to high adult mortality; a high burden of care for sick adults and orphaned children; and vicious interactions between AIDS and malnutrition” (Takarinda et al., 2017, p. 19). Livelihoods are greatly affected due to a loss of human, financial and physical assets. Where HIV/AIDS is high, farming skills are being lost, agricultural development efforts are failing, rural livelihoods are disintegrating, productive capacity to work the land is declining and household earnings are shrinking (Clover, 2003; Githinji & Crane, 2014). This appears to be rampant in female-headed households where agriculture is the main livelihood.

Studies have shown that when women had to help look after sick relatives, or when the wife herself was ill, the household food supplies went down. The reason for low production is that women are more actively involved in all the four pillars of food security². Coping strategies are undermined because gathering wild fruits or engaging in casual and migrant labour is problematic if less labour is available or knowledge has been lost as adults die. The selling of key assets is not possible if these have already been sold to purchase medicine or to cover other illness costs (Ansell et al, 2009; Chen & Kalichman, 2015). Assets are lost during HIV infection and AIDS related deaths. Orphans remain vulnerable to food insecurity because they tend to lose property when their parents die, livestock and equipment are sold to fund medical and funeral costs, or misappropriated by relatives (Megersa et al., 2014). Studies show that those orphans who inherit the land, may be too young or inexperienced to farm it and this eventually leads to food insecurity (Ansell et al., 2009; Sholeye et al., 2017).

²Four pillars of food security are availability, accessibility, utilization and stability ²

The seven most frequently cited drivers of household-level food insecurity in southern Africa are shown in figure 2.2. According to Gregory, Ingram and Brklacich (2005) the numbers in the arrows indicate the number of citations, as a percentage of 555 citations of 33 possible drivers. The drivers shaded in grey were noted as being chronic, while those in white indicate drivers experienced mainly as 'shocks'. The shaded arrows indicate drivers that acted primarily via reductions in food production, while the white arrows indicate those which acted by restricting access to food (Gregory, Ingram & Brklacich, 2005).

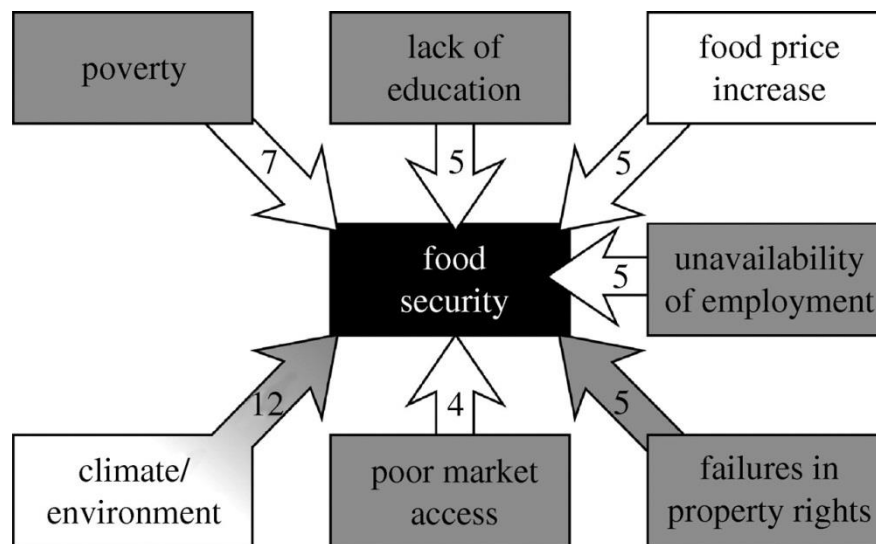


Figure 1.2 Drivers of food insecurity (Source: Scholes & Biggs, 2004 cited by Gregory, Ingram and Brklacich, 2005, p. 2141)

2.5 Effects of food insecurity on primary school children

The effects of household food insecurity on learners extend beyond child hunger, they result in deficits in children's physical, psychological and educational development (Fram et al., 2013; Gundersen, 2015). This shows that there is a negative correlation between food insecurity and academic performance. There are different mechanisms through which food insecurity can negatively affect educational attainment (Gelli and Suwa, 2014) as highlighted below.

2.5.1 Absenteeism

Children from food insecure households experience high rates of school absenteeism as they are pulled away from school to engage in productive activities (Tamiru et al., 2017). They are involved in family income-earning activities such as vending which is one of the coping strategies of food insecure households. Studies reveal that children who are members of severely food insecure households are more likely to be absent from school and they have a lower educational attainment in terms of the highest grade completed (Belachew et al., 2011; Huang et al., 2017). Lower educational attainment is a result of absenteeism, ill-health, poor academic performance and mal-behaviour at school. Absenteeism results in poor academic performance as the child fails to learn some of the major concepts and this leads to low grade scores and a repetition of grades. A study, carried out by Tamiru et al. (2016), in Ethiopia revealed that school absenteeism among primary school children was significantly high among food insecure households.

2.5.2 Psychological and emotional stress

Food insecurity has a psychological effect on children. It is a psychological and emotional stress factor thereby affecting children's behaviour and aspirations for further education (Belachew et al., 2011; Huang et al., 2017). Studies further reveal that food insecurity leads to worry, anxiety or sadness about the family's food supply and shame or fear of being labelled as poor. These effects greatly affect children's school engagement as it eventually leads to absenteeism and dropouts. It has been reported that children from food insecure households are also likely to have behavioural disorders and hyper activity which make them incompatible with school norms and this negatively impacts on their educational attainment (Payab et al., 2014). It has been observed that (Ramsey et al., 2011; Arteaga & Heflin, 2014) children with behavioural disorders are more likely to participate in crime, substance abuse, antisocial behaviour, impulsiveness and decreased socialisation. These antisocial characteristics affect children even after schooling, for example, they lead to a decreased opportunity for employment.

It has been observed that children who go to school without having a meal tend to be apathetic, withdrawn, passive, and they have decreased motivation and this greatly affects children's achievement scores or psychosocial behaviours (Alaimo, Olson & Frongillo, 2001; Tamiru

&Tefera Belachew, 2017). This assertion is further reinforced by Spies, Morgan and Matsauura (2014, p. 9) when they state that “hunger leads to fatigue, irritability, dizziness, frequent headaches and difficulty in concentrating and this has a tremendous impact on a child’s ability to learn and perform in the classroom”. Children suffering from these social disorders tend to be rejected by their teachers and peers thereby worsening the problem.

2.5.3 Mental development

Food insecurity causes ill-health and malnutrition and these have a major impact on the cognitive development of children. Malnutrition leads to poor cognitive development and subsequently low educational attainment (Belachew et al., 2011; Tamiru et al., 2017). It is further noted that children born in poor families receive little mental stimulation and they are far more likely than their richer peers to grow up in body and mind (Tamiru et al., 2016). Studies also showed that food insecurity is associated with delays in motor skills and cognitive deficits thereby leading to low school performance. These children tend to have poor mathematics scores, grade repetition, impaired social skills development and reading performance (Jyoti, Frongillo & Jones, 2005; Ngure et al., 2014). Malnutrition minimises the body and the brain’s ability to function and this leads to low academic performance as the child becomes incapacitated to learn. Musgrove (1993) and Shinsugi et al. (2015) noted that a child who is anaemic or calorie-deficient will be lethargic and will develop and learn more slowly. Food insecurity in early childhood is associated with cognitive deficits and poor school achievement (Shinsugi et al., 2015). Research has revealed that iron-deficient children scored lower on cognitive tests and did not perform as well on school tests.

Childhood malnutrition has severe effects on mental development. Studies have shown that early childhood stunting has been associated with long-term cognitive, motor and behavioural deficits including lower levels of intelligence, attention deficits, poor school achievement, impaired fine motor function and social skills and low work capacity (Gewa & Yandell, 2011; Ghattas et al., 2017). Food insecure learners end up dropping out from school due to incapacity to meet the demands of education. A study carried out by Neumann et al. (2003) in Kenya revealed that children consuming little or no animal products, particularly meat, were the least attentive in the classroom, less active physically and performed least well on cognitive tests. When children lack essential micro-nutrients in their diets they become disadvantaged academically. Chandler

(1994) and Lombe et al. (2016) also noted that feeling hungry in school, poor dietary intakes and not eating breakfast have all been found to be associated with poor school achievement levels. Without external help, food insecure learners will always be entangled in a cycle of poverty.

2.5.4 Health

Children's health and wellbeing is also compromised by food insecurity which lowers their educational attainment. Food insecurity leads to poor health, which is a barrier to educational access and achievement. Food insecurity harms children's health in a variety of ways such as stomach-aches, headaches and colds (Tamiru et al., 2016; Jebena et al., 2017). It has been also observed that physiological and psychological changes resulting from nutrient deficiencies as a consequence of food insecurity may result in increased frequency of illness among children and decreased participation in school activities (Ramsey et al, 2011; Shahraki et al., 2016). When children are not feeling well they tend to visit the hospital more often and they are given the opportunity to rest and this results in higher cases of school absences. Such children will miss important lessons due to absenteeism and this results in low academic performance (Shahraki et al., 2016).

2.5.5 School engagement

School engagement has been explained as (i) regular participation in classroom and school activities, and (ii) feelings a child has that he/she belongs in the school setting and values school relevant outcomes (Ashiabi, 2005; Chitiyo, 2014). School engagement involves active participation by the child in the school curriculum. Children from food insecure households are not actively engaged in school activities due to hunger and they have less energy. Food insecurity affects the energy levels of children and it can thus lead to their disengagement (Chitiyo, 2014; Gundersen, 2015). Children suffering from ill-health are less likely to be educationally engaged, they are apathetic, withdrawn, passive and not responsive to their environment. Furthermore, children experiencing emotional distress tend to experience attention difficulties. Their concentration spans are very low and are less likely to be engaged in school activities. Adaptive strategies for ensuring food security and eventually school engagement have been adopted by some parents.

2.6 Adaptive livelihood strategies

Adaptive strategies are permanent changes in livelihoods, whereby certain strategies have become integrated into the normal cycle of activities of the household (Yaro, 2004; Sango & Nhamo, 2015). These strategies are normally implemented before a disaster befalls a household. According to Ellis (as cited in Gillespie & Kadiyala, 2005) and Majekodunmi et al. (2017) a livelihood comprises the assets (natural, physical, human, financial and social capital), the activities, and the access to these (mediated by institutions and social relations) that together determine the living gained by the individual or household. Livelihoods provide a variety of procurement strategies to earn a living and they can be on-farm or off-farm activities. “Livelihoods that ensure food security are sustainable, that is, they can cope with and recover from stresses and shocks, maintain or enhance its capabilities, assets and entitlements, while not undermining the resource base” (Krantz, 2001, p. 234). The sustainability of a livelihood depends on the household’s resource base or endowments. If the resource base is weak, the livelihood strategies will be easily affected by shocks and stresses, thereby leading to food insecurity. Baro and Deubel (2006) and Nath and Inoue (2014) asserted that households have secure livelihoods when they can acquire, protect, develop, utilise, exchange and benefit from assets and resources. Access to resources constitutes the foundation for acquiring enough sets of entitlements which are needed in achieving sustainable livelihoods (Yaro, 2004; Mutami, 2015). A household that lacks assets and resources is vulnerable to food insecurity. For households to successfully adapt they need an enabling institutional and policy environment, a lack of institutional support is a significant barrier to local adaptive capacity to diversify livelihoods for positive wealth accumulation (Ericksen et al., 2010; Murungweni et al., 2014).

On-farm activities such as agriculture are unsustainable in Matobo district since it is rain-fed. It is easily affected by inter- and intra-seasonal droughts resulting in low productivity and food insecurity. Poverty is a barrier to irrigation farming in the district. The country has failed to maintain irrigation schemes and those that are functional tend to charge exorbitant prices for water usage. Some households practice vegetable production or market gardening, which is a dry season strategy to take advantage of the available labour force and make use of small reservoirs and wells to produce vegetables (Douxchamps et al., 2015). These activities normally take place along major rivers or dams where there is a reliable source of water.

Diversification is an important strategy for dealing with risk and vulnerability and building resilience (Hanazaki et al., 2013; Murungweni et al., 2014). “It is an ex-ante adaptation strategy, that is, an action taken in anticipation of a given climate realisation” (Burke & Lobell, 2010, p. 140). “Ex-ante adaptations often centre on strategies of diversification, which attempt to capitalise on the differential effects that a given climate event might have on different crops and activities in a given year” (Burke & Lobell, 2010, p. 143). Pandey et al. (2007) and Moyo et al. (2017) also allude to ex-ante adaptations being based on diversified strategies that focus on the growing of different crop varieties so as to minimize the chances of complete crop failure. However, off-farm activities such as labour migration (often a consequence of poverty) are less sustainable because it is associated with high-risk behaviours and HIV prevalence (Githinji & Crane, 2014). This assertion is supported by Ansell et al. (2009) and Loison (2015) when they state that the livelihood strategies adopted by the poor, in particular labour migration, tend to promote high risk sexual activity. AIDS weakens the household’s ability to resist the effects of a crisis since human and financial assets would be lost.

The harvesting of wild food is one of the off-farm livelihood strategies. Biodiversity provides an important safety-net during times of food insecurity, for example, wild harvested meat provides 30 – 80% of protein intake for many rural communities (Sunderland, 2011; Bele et al., 2014). Research shows that around one billion people rely on wild harvested products for nutrition and income and the ‘invisible’ trade in wild resources is estimated to generate \$90 billion/annum (Sunderland, 2011; Murungweni et al., 2014). This shows that wild harvested plants and animals, especially from forests, play an important role for the economy of the world’s rural poor. Makate et al. (2016) and Busse et al. (2017) further highlighted that in many rural locations, particularly areas that lack basic infrastructure and market access, the collection of wild resources provides considerable subsistence support to local livelihoods. Harvesting of wild food such as insects, fruits and roots is a viable livelihood option, however, it has been greatly affected by climate change which has reduced the quality and quantity of products (Kelemu et al., 2015; Waldron et al., 2017).

2.7 Coping strategies

Studies have shown that when livelihoods are lost people resort to coping strategies for temporary solutions (Gillespie & Kadiyala, 2005; Musemwa et al., 2015). Coping strategies are

the mechanisms used by those facing hunger to alleviate the situation for themselves and their children (Musemwa et al., 2015). Coping strategies are employed once the principal source of production has failed to meet expected levels and producers have literally to cope until the next harvest (Davies, 1996, cited in Yaro, 2004; Gebrehiwot & van der Veen, 2014). They are used in the short-term to off-set shocks. Coping strategies tend to increase a household's vulnerability, for example, the selling of assets or sexual exchange as a survival strategy. The selling of assets such as livestock or human migration are examples of ex-post activities. Ex-post activities are undertaken after the event such as drought is realised (Sabar, 2016).

The selling of productive assets such as livestock is an unsustainable strategy because it can only prop up consumption in one year, but dampens the subsequent productivity and food access of households in later years (Sabar, 2016). It increases households' vulnerability to food insecurity in the later years since there will be no productive assets for ensuring food security. According to Wiebe et al. (2011) and Musemwa et al. (2015) coping mechanisms involve undesirable but often unavoidable compromises. These include withdrawing children from schools which destroys long-term human capital; the sale of assets which reduces the stock of physical and financial resources and is not easily reversible. The other coping mechanism entails shifting from more nutritious foods towards less nutritious items or simply eating less causes malnutrition, affects labour productivity and reduces children's cognitive potential (Musemwa et al., 2015). Coping strategies are undesirable in the sense that they wear down assets that will be needed in the future.

“Diversification of incomes out of agriculture are a promising adaptation strategy in the face of a changing climate, but for many of the poorest households, participation in these potentially more lucrative non-farm activities is often limited by liquidity or human capital constraints” (Burke & Lobell, 2010, p. 146). Therefore, more people tend to engage in lower-return coping activities such as seasonal labour.

2.8 Indigenous Knowledge Systems as an adaptation strategy

Rural farming communities can embrace indigenous knowledge systems (IKS) in order to mitigate food insecurity. IKS is defined as “knowledge that an indigenous or local community accumulates over generations of living in a particular environment” (Alexander et al., 2011, p.

478). IKS is a strategy that ensures food security in a variable climate and can be afforded by even poor families as it has shown potential in development of locally relevant and sustainable adaptation strategies (Nkomwa et al., 2014). Households benefit from their environments by understanding weather patterns through the use of natural indicators such as changes in the behaviour of local flora and fauna or by getting wild foods from the local forests (Bharucha & Pretty, 2010; Nkomwa et al., 2014). According to FAO (as cited in Erskine et al., 2015, p. 57) “nutrition and biodiversity converge to a common path leading to food security and sustainable development and that wild species and intra-species biodiversity have key roles in global nutrition security.” The harvesting of wild species, that is wild animals and plants, is important in ensuring food security as they contribute essential nutrients for a balanced diet.

a. Wild foods

Wild foods provide essential micro-nutrients, such as iron, zinc, calcium, fatty acids and vitamins A, B2 and C, for ensuring food security. Wild foods serve to make the diet more diverse, interesting and flavourful and they also provide vitamins and minerals which are important for strong growth and maintenance of good health. From the wild, the landless poor and vulnerable households can access seeds, vegetables, fruits, game meat, fish, insects and honey and these are an important part of the global food basket. Sraku-Lartey et al. (2017) pointed out that many edible plants produce leaves and flowers at the onset of the rainy season, the annual “hungry period” when food granaries are running low and the harvest of the next crop is a long way off. This cushions many households from hunger. Forests also provide livelihoods and food for some 300 million people in the form of non-timber forest products (NTFPs) (Bharucha & Pretty, 2010; Tlhompho, 2014). The inclusion of wild foods in the food basket improves dietary diversity thereby ensuring food security, for example, wild fungi, bush meat and fish are important sources of protein and income especially for households afflicted by HIV/AIDS, wild foods offer dietary supplements at low labour and financial costs (van der Merwe et al., 2016). The innate resilience of wild species to climate change enables them to have a buffering effect against food insecurity. The vitamins and minerals accessed are important to children, to ensure good growth and physical development, to also to women, especially when they are seeking to conceive, pregnant or breast feeding, and to the elderly who are weaker and more susceptible to disease (Harris and Mohammed, 2003; Kelemu et al., 2015).

Wild foods are an important source of livelihood for rural communities. Studies indicate that trade in and the use of wild foods provides an important supplement to general incomes and is especially critical during economic hardship (Bharucha & Pretty, 2010; Kamwendo & Kamwendo, 2014). In addition to this assertion, Kaschula (2008) and Olango et al. (2014) pointed out that there is some evidence that during hard times households increase their consumption and/or sale of wild, “free” resources to tide them over until better conditions return. According to the findings of a study that was carried out by Harris and Mohammed (2003) in Northern Nigeria, it is also noted that although trade in wild foods did not produce a significant income for many, it did provide vital income for poorer households. Wild foods are normally sold at the local markets in rural areas or they are transported to neighbouring urban areas for sale. DeMerode et al. (as cited in Bharucha & Pretty, 2010) note that almost 90 per cent of harvested bush meat and fish is sold rather than consumed. By selling wild foods, communities can access other food stuffs that are not locally available thereby ensuring their food security. Fuel wood from local forests which are illegally harvested is also illegally transported to neighbouring cities especially at night to boost income sources.

Studies have shown that household use of wild foods does not necessarily depend on a natural abundance but on socio-economic factors such as price or individual and cultural preferences (Bharucha and Pretty, 2010). Studies (Kaschula, 2008; Gido et al., 2017) show that wild foods are utilised more frequently as a coping strategy by households of lower socio-economic status. Erskine et al (2015) added that foraging for wild food is often high amongst poor households in rural areas. Some researchers in Zimbabwe concluded that the poor are more dependent on wild products, including wild food since they are unable to produce sufficient food from agriculture and to purchase vegetables at periodic markets (Harris and Mohammed, 2003; Sango & Nhamo, 2015). Contrary to this, “some poor households may not capitalise on the availability of wild foods but resort to other short-term measures such as the sale of stored crops, borrowing cash or doing wage labour” (McSweeney, 2005 cited in Bharucha & Pretty, 2010, p. 2918). From these sources of income, they get very low financial resources which fail to curb their food insecurity. The evidence of no correlation between socio-economic status and the likelihood of harvesting wild foods may be attributable to site-specific socio-cultural determinants as well as the dynamics of resource availability within local areas (Kaschula, 2008; Audefroy & Sa’nchez, 2017). Some poor households are reluctant to harvest wild foods because they are highly time

and energy consuming, for example, foraging, carrying firewood and water for boiling to remove toxic components (Erskine et al, 2015). A lack of knowledge on the value of wild fruits also exposes most rural households to food insecurity.

Wild meats, insects and fruit kernels provide high quality protein and wild leafy vegetables are key sources of micronutrients and these sources of food are important for those infected with HIV since they require up to 15% more energy and 50% more protein as well as more micronutrients (Kaschula, 2008; Gido et al., 2017). According to Dudley et al. (as cited in Bharucha & Pretty, 2010) and van der Merwe et al. (2016) food stress associated with HIV/AIDS can drive households to intensify wild food use, putting unsustainable pressure on local resources especially when combined with deepening poverty. Contrary to this assertion, the use of wild foods could also decline due to HIV/AIDS and this is necessitated by the loss of ecological knowledge as adults die, there are declines in household labour and a stigma attached to HIV/AIDS (Hunter et al., 2009; Githinji & Crane, 2014). Therefore, wild foods are essential for people suffering from HIV/AIDS, however, people might over-harvest leading to an extinction or they might under-utilise due to a shortage of labour or due to the perception that the consumption of wild fruits is a source of shame. Most people are now replacing wild foods with store-bought products and this leads to a poor intake of micronutrients.

b. Anthropogenic effects on wild foods

It is advanced that population growth and the commercialisation of agriculture has limited the capacity of ecosystems to sustain food production and to maintain the habitats of wild food species (Bharucha & Pretty, 2010; Nkomwa et al., 2014). As the population grows and the demand for land increases, there is a reduction in wild foods and this exacerbates food insecurity. Population increase also puts pressure on wild foods leading to competition and over harvesting or unsustainable harvesting. Local communities end up suffering from malnutrition and hunger due to unsustainable harvesting of local wild foods, which leads to extinction. Bharucha and Pretty (2010, p. 2921) pointed out that “where species have traditionally been harvested sustainably, the entry of the market and the commercialisation of species hitherto used exclusively for local subsistence can also result in overharvesting.”

2.9 Sustainable Development Goals

After carrying out consultation exercises for more than two years, including face-to-face surveying of citizens in over 100 countries, world leaders came up with 17 Sustainable Development Goals (SDGs) or ‘global goals’ (Caprani, 2016; Waldron et al., 2017). The SDGs advance the development agenda by reconciling and building upon the successes and some of the short comings of the Millennium Development Goals (2000-2015) (Reed, van Vianen & Sunderland, 2015).

The SDGs are also referred to as ‘global goals’ because they encompass 200+ nations from all income levels that have committed to “end poverty”, “end hunger” and “protect, restore and promote sustainable use of terrestrial ecosystems”, among others (Reed et al, 2015). The time frame for the SDGs is 2015 to 2030, a period of 15 years. The overarching goal of the SDGs is to eradicate poverty through the promotion of social development, economic development and environmentally sustainable development (Hawkes & Popkin, 2015; Kim, 2017). This encompasses all nations and all people regardless of gender since it is guided by the motto ‘Leave No One Behind’.

2.9.1 The Sustainable Development Goals and Food Security

Studies indicate that 66 million primary school-age children attend classes hungry across the developing world, with 23 million in Africa alone (UN, 2015). “In sub-Saharan Africa, population growth outpaced efforts to end undernutrition as the number of stunted children increased from an estimated 50.1 million in 2000 to 57.3 million in 2014” (UN, 2015, p. 15). Sustainable Development Goal 2 is about “ending hunger, enhancing food and nutrition security and promoting sustainable agriculture by 2030” (Loewe & Rippin, 2015, p. 18). The goal seeks sustainable solutions to end hunger in all its forms by 2030 and to achieve food security. The pillars of food security are addressed by SDG 2.

Sustainable agriculture focuses on food availability through increasing productivity whilst ensuring efficient use of resources (FAO, 2014). This implies that smallholder farmers should practise Climate-smart agriculture which aims to improve food security and rural livelihoods and facilitate climate change adaptation and provide mitigation benefits (Scherr, Shames and Friedman, 2012). Three targets of SDG 2 are about food availability that is, increasing

agricultural productivity and incomes as highlighted by Climate-smart agriculture. “Climate Smart Agriculture (CSA) aims to provide principles to identify technologies, management tools, and policies that will enable farmers to adapt to challenges of climate change while maintaining and improving societal wellbeing” (FAO, 2018, p. 621).

More than 790 million people still lack regular access to adequate food and this is mostly a result of natural and human-induced disasters or political instability (UN, 2016). For SDG 2 to be achieved people should have access to food and this is possible through sustainable agriculture as it increases productivity and incomes. With higher incomes people can have access to balanced diets. Goal 2 also emphasizes food utilization which is one of the key pillars of food security. Food utilization focuses on consuming nutritious foods containing major micronutrients so as to end malnutrition. Nutritious foods in infancy and beyond, access to good healthcare and hygienic environments reduces nutrition-related non-communicable diseases that are associated with impaired cognitive ability and reduced school and work performance (Hawkes & Popkin, 2015). This shows that the SDGs aim to ensure the health and wellbeing of all, particularly women, children and adolescents (Kamath, 2015). Malnutrition is controlled through the “diversification of diet which is the hallmark of sustainable agriculture” (Busse et al., 2017, p. 14).

2.10 School supplementary feeding programmes

School supplementary feeding programmes have been widely embraced by various countries and their effects are variable. Gelli et al. (2009) and Gelli and Suwa (2014) highlighted that school feeding programmes lead to increased access (of girls in particular), reduced school dropout, particularly in the lower primary school grades, and improved student learning. More children will go to schools in order to get food and when they are energetic, they actively engage in school activities. Studies have also revealed that for low-income families, the School Breakfast Programme is an important component of the safety net for children and this has been linked to improved nutrient intake (Sharkey et al., 2013; Chitiyo, 2014). The major aim of these school feeding programmes is to provide nutritious foods to school-age children at no, or reduced cost (Baum et al., 2017). Therefore, school feeding programmes are a social safety net as basic nutrients are provided to children living in poverty and in food insecure households.

2.10.1 School feeding programmes in developed countries

School feeding programmes tends to be more extensive and better managed in rich and middle income countries. Estimates indicate that the National School Lunch Programme is available to 92 percent of United States students and that 56 percent of these students participate in the programme (Dunifon & Kowaleski-Jones, 2003; Degarege et al., 2015). Feeding programmes tend to be the smallest in food insecure regions wherenational budgets are very shallow to cater for such programmes. Therefore, most food insecure children from rich nations tend to perform better academically than children from less developed nations. There is a definite link between participation in school-based food assistance programmes and the cognitive outcomes for children. One study founnds that the Massachusetts school breakfast programme is associated with higher children’s test scores and lower levels of school tardiness and absences (Snelling et al., 2014).

2.10.2 School feeding programmes in developing countries

Children who are getting a balanced diet tend to be actively engaged in learning and they end up excelling better than those that are always hungry. Zhou et al. (2014, p. 41) point out that “healthy and balanced nutrition has a significant effect on students’ physical and mental development”. Some of the developing countries are being assisted by the World Food Programme (WFP) to implement school feeding programmes. In 2005, WFP-assisted school feeding programmes were ongoing in 72 countries, reaching approximately 21.7 million beneficiaries (Gelli, Meir & Espejo, 2007; Gelli & Suwa, 2014). These programmes greatly benefit children as they get basic nutrients for active school engagement. Studies indicate that, by supporting school feeding programmes, the WFP intends to support efforts aimed at achieving universal primary education and reducing gender disparities in education (Gelli, Meir & Espejo, 2007; Abizariet al., 2014). These programmes, as highlighted before, reduce gender disparities amongst learners, increase school enrolments and attendance especially of girls, reduce the dropout rates in the lower primary school grades and they improved student learning capacity.

Statistically, it is shown that enrolment in WFP-assisted schools increased at a rate of 28% for girls and 22% for boys during the first year of any school feeding programme (Gelli et al., 2007; Kristjansson et al., 2016). Therefore, the main role of school feeding programmes especially in developing countries is to improve access to education as measured by increased school

enrolment, attendance and retention rates (Fernandes et al., 2016). The Ghana School Feeding Programme that was launched in 2005 had three objectives: (1) increase school enrolment, attendance and retention; (2) reduce short-term hunger and undernutrition including anaemia among school children; and (3) boost domestic food production (Fernandes et al., 2016). One can deduce that school feeding affects educational outcomes directly by increasing enrolment, attendance and completion and it affects health directly by improving nutritional status, this in turn has an indirect impact on education, as improving nutritional status has a positive impact on learning outcomes (Masset & Gelli, 2013; Gundersen et al., 2017). It is asserted that these objectives can only be achieved if various stakeholders such as government, school administrators, teachers, learners and parents are actively involved in the implementation of the programmes.

A framework showing the various steps to be taken in the implementation has to be developed and followed so that all stakeholders are actively involved in the mobilisation of resources. Figure 2.3 below shows Fernandes et al.'s (2016) four-tier strategy for implementing the School Meals Planner. According to the 1996 World Food Summit, food security at the individual, household, national and global levels is achieved when all people, at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (FAO, 2006; Global Panel, 2015).

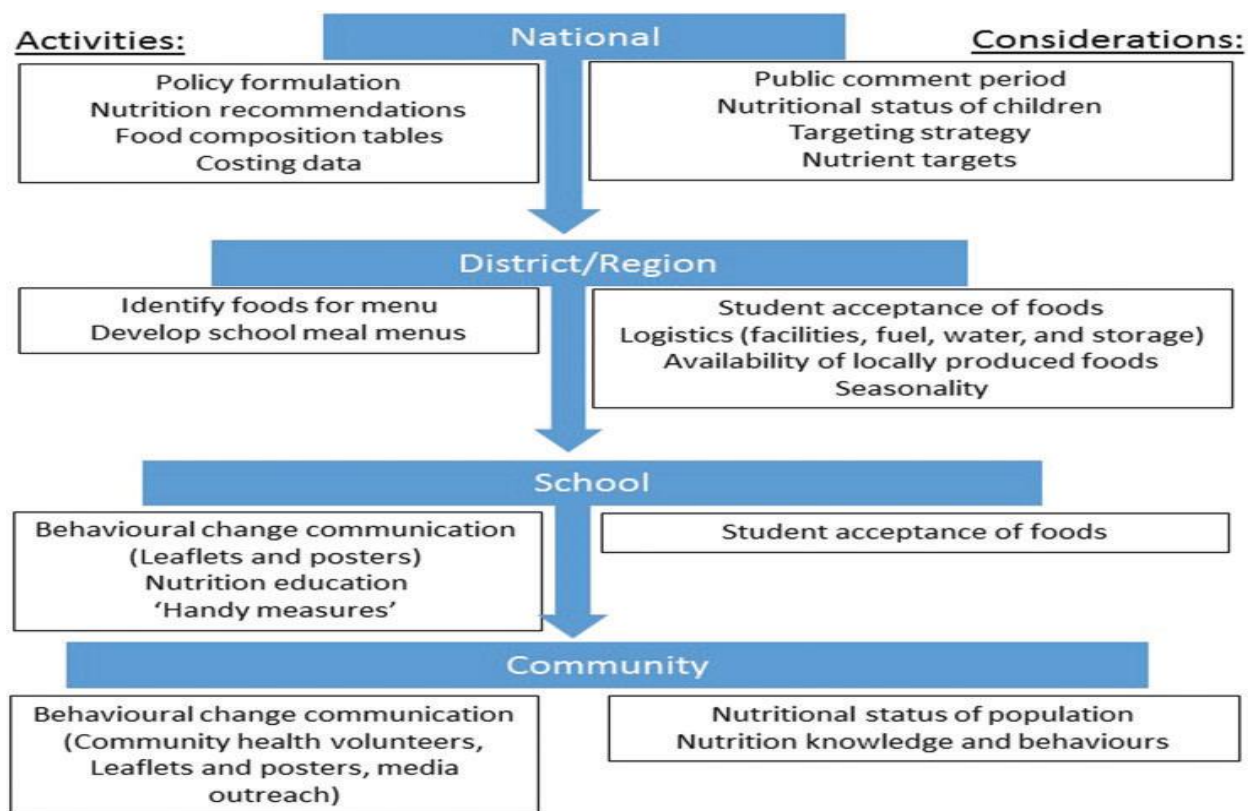


Figure 2.3 Four-tier strategy for implementing the School Meals Planner in developing countries (Source Fernandes et al, 2016, p. 8)

Investigating the nutrition status of children and food preferences of communities prior to the implementation of school feeding programmes leads to programmes that auger well with the nutrition needs of the learners thereby leading to improved school attendance, school performance and nutrition status. Programmes that are not based on information from research tend to be a failure in achieving intended objectives. It was observed from some studies (Meme et al., 1998; Gelli & Suwa, 2014) that irregularities (stealing food) in school feeding programmes were found to be responsible for poor school enrolment and attendance. Therefore, school feeding programmes do not necessarily improve enrolment levels nor do they improve the educational performance or the nutritional status of the children (Meme et al., 1998; Chitiyo, 2014). These can only be improved when adequate research is carried out and all stakeholders are involved in the development and implementation of the programmes. Jacoby (2002) and

Abizari et al. (2014) noted that the most common reason for failure of the programmes is built around a misguided belief such as correcting a nutritional deficiency that does not exist. In the same vein, a programme's success will also depend on the ability of communities to actively engage in the programme and in the strengthening of the public institutions involved (Masset & Gelli, 2013; Kristjansson et al., 2016). It is argued that a meal at school is a social event that engages, motivates and simulates the learners, thereby reducing absenteeism (Snelling et al., 2014).

2.10.3 School feeding programmes: Successes and failures

Other feeding programmes fail because of leakage. Leakage is the consumption of food by individuals other than the intended recipients (Baum et al., 2017). This is common where corruption is high or where there is no rule of law. Studies have shown that 50 – 75% of the ration of targeted supplementary feeding programmes in the developing countries does not reach the intended recipients (Patel et al., 2005; Baum et al., 2017). Food is stolen on the way and programmes fail to achieve their intended objectives.

For school children to be food secure all the four pillars of food security should be fulfilled, that is, the availability of food resources, access to those resources, sufficient consumption of food, and appropriate utilization in a sanitary and nutritious manner (Baro & Deubel, 2006; Degarege et al., 2015). It is advanced that school feeding schemes should meet these four pillars of food security. Choudhary and Parthasarathy (2007) and Snelling et al. (2014) asserted that it may be true that food is available to individuals who have access, but vitamin deficiencies or health problems may result from the imbalanced diet of food that is consumed. For school children to have a proper functioning immune system they need adequate nutrition.

According to Gelli et al. (2016, p. 3) figure 2.4, below, illustrates in very broad terms the impact theory of school feeding on agriculture, education, and health. School feeding affects educational outcomes directly by increasing enrolment, attendance and completion (line 'a' in the figure). It affects health directly by improving nutritional status (line 'b'); this in turn has an indirect impact on education, as improving nutritional status has a positive impact on learning outcomes (line 'd'). The intervention can also affect income directly by increasing households' food

security (line ‘c’). In addition, the intervention can benefit the small enterprises involved in the school food service provision.

Finally, there are effects running through increased income and health and nutrition and vice versa, as richer families are investing more in human capital and more educated and healthier adults are more economically productive (lines ‘e’). However, these latter effects (represented as dotted lines in Fig. 2.4) only occur in the long term and certainly not before children have left school.

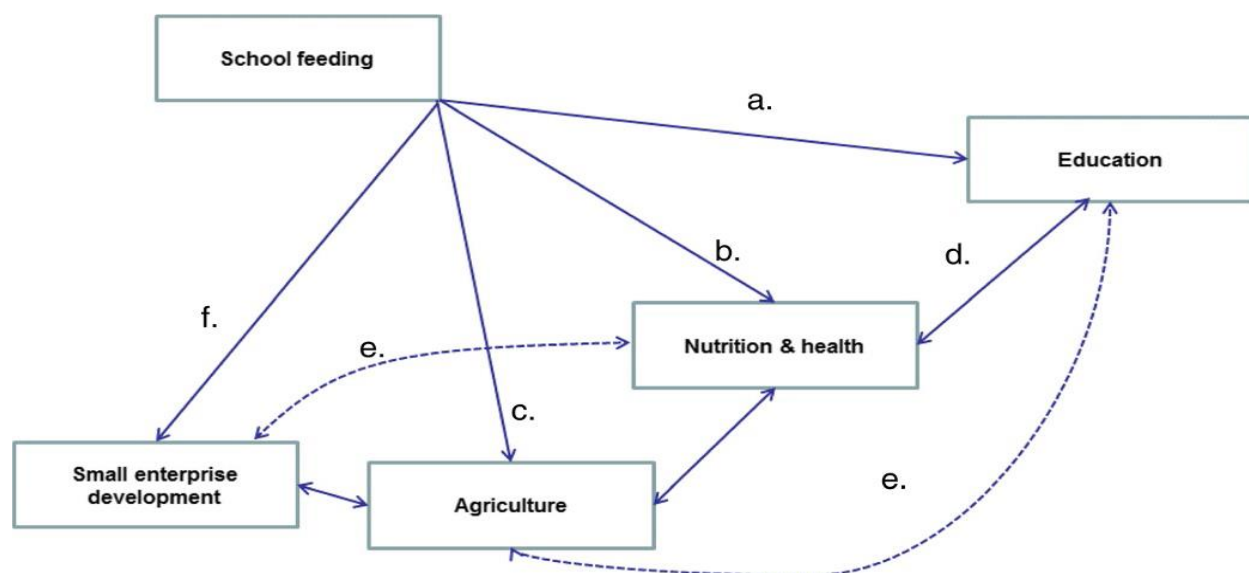


Figure 2.4: The impact theory of school feeding on agriculture, education, and health (source: Gelli et al, 2016, p. 5).

It must be emphasised that the ability of the school feeding intervention to deliver the effects depicted in Fig. 2.4 critically depends on the appropriate implementation of the programme, the ability of communities to actively engage in the programme and in the strengthening of the public institutions involved (Gelli et al., 2016).

In most developing countries, school enrolments have increased, albeit, achievement levels have remained very low and this has been necessitated by hunger in schools (Powell et al, 1998). Short-term hunger in children may result in difficulty in concentrating and performing complex tasks, for example, missing breakfast detrimentally affects children’s cognition (Powell et al., 1998; Gelli et al., 2015). According to Colecraft et al. (2006) and Abizari et al. (2014) in low-

income African communities, children's diets are typically comprised of tubers and cereals that are low in micronutrients (such as iron, zinc, calcium, riboflavin and vitamins A and B-12) and high in inhibitory factors that interfere with nutrient absorption. Studies also show that a lack of micronutrients leads to poor child health, growth deficits and impaired cognitive performance. The introduction of school feeding programmes has assisted in curbing short-term hunger in schools. School feeding programmes have been a key response to food and economic crises as it "improves school attendance and learning as well as a child's physical and psycho-social health" (Gelli et al., 2015, p. 2). However, although the benefits of school feeding programmes are well documented, controversy remains over their effectiveness.

2.11.1 Reasons why school feeding programmes work

This section discusses the successes of school feeding programmes. It begins with long term correction of nutritional deficiencies, followed by short term hunger relief, children feeling valued and looked after, reduced absenteeism from school, improved school diet inspiring improved home diet and lastly improved literacy reducing the intergenerational cycle of poverty.

Long term correction of nutritional deficiencies

School feeding programmes should correct overt nutritional deficiencies, which in turn improve brain growth and performance, therefore, they should be rich in energy, protein, and vitamins (Greenhalgh, Kristjansson & Robinson, 2007; Kristjansson et al., 2016). According to Hoyland, Dye and Lawton (2009) and Tamiru et al. (2017) breakfast consumers tend to have higher micronutrient intakes and a better macronutrient profile than breakfast skippers. Some studies (Powell et al., 1998; Chitiyo, 2014) have shown that providing breakfast benefited children's classroom behavior only if they were in well-equipped and well-organized schools, and that the behavior of children in poorly organized and overcrowded schools actually deteriorated. Therefore, there is no convincing evidence for either long or short-term effects of breakfast on cognition and school learning (Hoyland, Dye & Lawton, 2009; Gundersen, 2015).

Short term hunger relief

Short-term hunger, which is common in children who are not fed before going to school, has an adverse effect on learning, since a hungry child has more difficulty concentrating and performing complex tasks, even if otherwise well-nourished (Bergeron & Del Rosso, 2001; Tamiru et al., 2017). School feeding programmes play an important role in eradicating short-term hunger in schools as some learners go to school without having breakfast. “School feeding programmes were promoted around the theory that school feeding leads to short term rises in blood (and hence brain) glucose levels, which counteracts the negative effect of hunger on concentration, memory, motivation, and other psychological prerequisites for learning” (Greenhalgh, Kristjansson & Robinson, 2007 p. 859). Eradicating short-term hunger enhances the concentration span and learning capacity of school children, in other words it improves the cognitive and educational abilities of children (Jomaa, McDonnell & Probart, 2011; Gelli & Suwa, 2014). Studies have showed that a generous breakfast cooked in a practical class before the lesson began improved attention to set tasks.

Reduced absenteeism

There is a higher school attendance and retention levels in schools in developing countries where there is supplementary feeding. According to Bergeron and Del Rosso (2001) and Gelli (2015) school feeding programmes can help to get children into school and help to keep them there, increasing enrollment and reducing absenteeism, they increase attractiveness of schools to children; and once the children are in school, the programmes can contribute to their learning, through avoiding hunger and enhancing children’s cognitive abilities. School feeding programmes enable children to be actively engaged in school activities, thereby promoting learning. Punctuality is also improved since children will be afraid to miss their meals and school feeding improves school progress by reducing the dropout rate (Jomaa et al., 2011; Tamiru & Belachew, 2017). Children are encouraged to attend and complete a school day when they get food at school and parents also, are motivated to send their children to school when children are provided with food at school (Jomaa et al., 2011; Ghattas et al., 2017).

Improved school diet inspires improved home diet

Studies show that when children were given breakfast at school, their families subsequently bought more milk, meat, fish, and high vitamin C foods (Greenhalgh et al., 2007; Ghattas et al.,

2017). This implies that families get motivated to maintain the type of food that their children eat at school and school feeding programmes provide extra income for poor families by reducing the amount of money they spend on food. Also, the meal represents a substantial economic benefit to the family if the child does not eat at midday, or at some other time, from the family pot (Powell et al., 1998; Bergeron & Del Rosso, 2001; Baum et al., 2017). The involvement of all stakeholders in identifying the problem/s in the feeding programme and developing solutions to address it, is central to the effectiveness of the school feeding programme (Satzinger et al., 2009; Degarege et al., 2015).

Improved literacy reduces intergenerational cycle of poverty

According to Greenhalgh et al. (2007) and Snelling et al. (2014) school feeding programmes lead to higher literacy rates, which would offer the chance to break the cycle of poverty, giving the next generation of children better opportunities for good nutrition and health. As feeding programmes lead to high attendance and retention levels, they also result in higher literacy rates. The main impacts of SFPs with regard to meeting educational objectives are to improve learning, increase lifetime earnings of targeted children, and increase access to education for girls, orphans, and vulnerable children (Jomaa et al., 2011; Gelli & Suwa, 2014). Education leads to high agricultural productivity and income, girls' education is associated with lower fertility and having smaller family increases food availability. Education contributes to a range of better nutrition and health practices, from health-seeking behavior to mothers' improved capacity to care for their children, including providing for their health and nutritional needs (Bergeron & Rosso, 2001; Abizari et al., 2014).

Figure 2.5 below by Bergeron and Rosso (2001) shows the overall educational effects of school feeding programmes. They explain that the three main effects of school meals are improved nutritional status; increased enrollment and attendance and short-term hunger alleviation and these effects facilitate learner engagement in learning and retention and it improve cognitive skills and behavior resulting in learners' educational achievement.

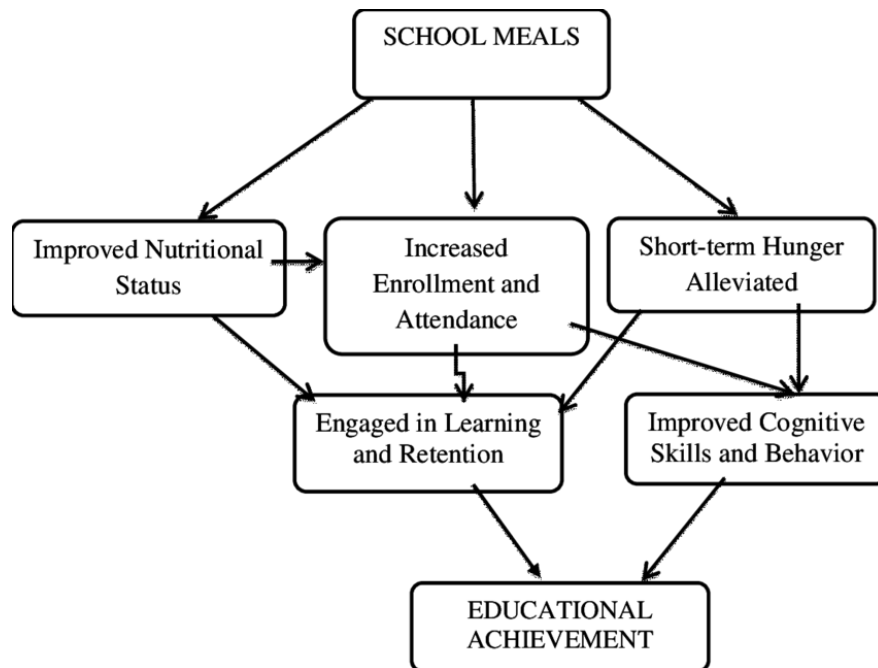


Figure 2.5 The impacts of school feeding programmes (Bergeron and Del Rosso, 2001, p. 134)

2.11.2 Reasons on why school feeding programmes do not work

This section discusses three reasons on why school feeding programmes do not work. It begins with food offered that is not consumed, or provides too little of the missing nutrient/s, followed by Bioavailability, and lastly supplementation that occurs too late.

Food offered is not consumed, or provides too little of the missing nutrients

Investigations on missing nutrients are rarely undertaken in developing countries. Some studies concluded that there is little evidence for nutritional benefits of school feeding and that school feeding only enhances learning when other improvements in school quality are made (Jomaa et al, 2011; Kristjansson et al., 2016). Therefore, food alone is not sufficient to bring about the range of changes required to significantly improve educational outcomes but other basic amenities such as school infrastructure, curriculum development and reform, teacher training and educational materials should be provided since all these affect a child's ability to learn (Powell et al., 1998;

Bergeron & Rosso, 2001; Tamiru et al., 2017). It is thus advanced by some scholars that multiple improvements in the school environment need to be made for educational improvement and not just the provision of food.

Bioavailability

Low bioavailability was occasionally invoked as an explanation for a lower than expected effect of a feeding programme (Greenhalgh et al., 2007; Tamiru et al., 2017). Studies have shown that the increase in total dietary intake from school feeding offsets any diminished intake at home (Jomaa et al., 2011; Chitiyo, 2014). This implies that, for school feeding programmes to be effective, children should take in nutritious food in the rightful proportions. In addition to this, school feeding programmes become effective if they are implemented in conjunction with exercises such as deworming especially in regions where high rates of worm infections prevail. Bergeron and Rosso (2001) and Gundersen (2015) asserted that food utilization is enhanced when there is helminth (deworming) control; micronutrient supplementation and life-skills-based nutrition, health and hygiene education with a behavioral focus.

Supplementation occurs too late

Some researchers speculated that the failure of their feeding programme in children aged 7-12 was because the children were “too far along the track of malnutrition.” They recommended that subsequent studies should target younger children (Greenhalgh et al., 2007; Tamiru et al., 2017). This implies that feeding programmes should also target pre-school children so as to address nutrient deficiencies at an early age. According to Jomaa et al. (2011); Spies et al. (2014) and Kristjansson et al. (2016) greater benefits of school feeding programmes are observed among younger school-aged children.

Table 2.1: Summary of the scientific evidence on the impact of school feeding activities and provisions on intended nutrition, health, and educational outcomes in school-aged children and their households (Jomaa & McDonnell, 2011, p. 87)

School feeding provisions and activities	Positive intended outcomes
In-school meals (breakfast, lunch, or mid-day), snacks, and take-home rations	School-aged children (participants): Energy intake*
Energy and micronutrient content of school	Nutritional status*

meals, snacks, and/or take-home rations	School enrollment* School attendance* Growth (weight and height)† Cognition (memory, complex mental abilities) and classroom behavior (attention and participation)† Educational achievement (arithmetic and literacy tests)† <i>Household:</i> Energy intake of siblings and other family members (in-school meals and take-home rations)†
Deworming: Frequency and dosage of anthelmintic treatment	Decreased morbidities and illnesses* Improved micronutrient/nutritional status of school-aged children – if deworming is coupled with micronutrient fortification of school meals/snacks†
Health and nutrition education curricula Age, developmentally and culturally appropriate nutrition and health education lesson plans	<i>School-aged children:</i> Nutrition and health knowledge, attitudes, and behaviors Nutrition and health knowledge, attitudes, and behaviors <i>Household:</i> (c) Nutrition and health knowledge and attitudes of household members, and allocation of food and health resources‡

* Conclusive: consistent findings that support the link between SFP provisions and intended outcomes.

† Inconclusive: mixed results from the literature, weaker evidence on link between SFP provisions and intended outcomes.

‡ Unexplored: no empirical evidence to explore the relationship between SFP provisions and intended outcomes.

2.12 Conclusion

Chapter Two of this thesis dealt with the concept of food insecurity, mainly at household level. Determinants of food insecurity from the regional level to household level were highlighted, that is, demographic, physical, economic, social and government policies. Food availability and accessibility is determined by these factors and there are spatial and temporal variations. However, there is a variation on the age of the household head as the determinant of food

insecurity. In some areas it was found that aged household heads are food secure due to their experience in farming. On the other hand, results show that young household heads are food secure because they are economically active. The chapter also sketched some literature on the effects of food insecurity on children's learning. It was found that it leads to absenteeism, psychological and emotional stress, poor mental development, ill-health and low school engagement. Lastly, the chapter highlights some literature on the merits of school feeding programmes. It was found that these programmes are more effective in developed countries and when governments diagnose the nutrient needs of children and then supplies the food that caters for those needs. In some developing countries, such as Zimbabwe, feeding programmes have failed to achieve the intended goals because of irregularities like price fluctuations, environmental and agricultural changes, lack of information and leakage.

Chapter Three describes in detail the research methodology and design employed in the study.

CHAPTER THREE:

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

The previous chapter explored the literature, core concepts and theories to establish a basis to understand the vulnerability of primary school children to food insecurity in Matobo district, south western Zimbabwe.

In this chapter, I explain that I used qualitative research and a case study research design as I explored one context in SW Zimbabwe. The case study approach allowed me to spend an extended period of time on site and interact regularly with the people being studied in order to yield comprehensive and rich data from people's perceptions, perspectives, and understandings of that particular situation. Qualitative research unfolds in the natural setting and I spent time in schools to learn about the educational concerns (Creswell, 2014). The research instruments included in-depth-interviews with teachers and focus group discussions with key informants, that is, the parents of primary school children. Purposive sampling was used to access the parents of children who are vulnerable to food insecurity. The researcher elicited the information from teachers as well. In depth details on the above follow in the section below.

3.2 Context of the study

The study was carried out in the Matobo district, in Matabeleland South province of Zimbabwe. Matobo is situated in agro-ecological region IV. The average annual temperature is 19.9 °C and precipitation averages 457 mm. The area experiences a semi-arid climate as it is subject to periodic seasonal droughts and severe dry spells during the rainy season (Meteorological Services Department, 2007). The rainy season occurs from November to March. Most of the areas in the district have wetlands which sustain community gardens during the dry season. Vegetation is dominated by *Acacia fleckii*, commonly known as black thorn; mopane (*Colophospermum mopane*) and *Cactus spp*, a dry land plant species (Ndhlovu, 2009). There are 72 primary schools in Matobo district. The study was conducted in Wards 16 and 17 of Matobo

district. Figure 2.1 shows the location of Matobo district and Wards 16 and 17. The map below is not drawn to scale.

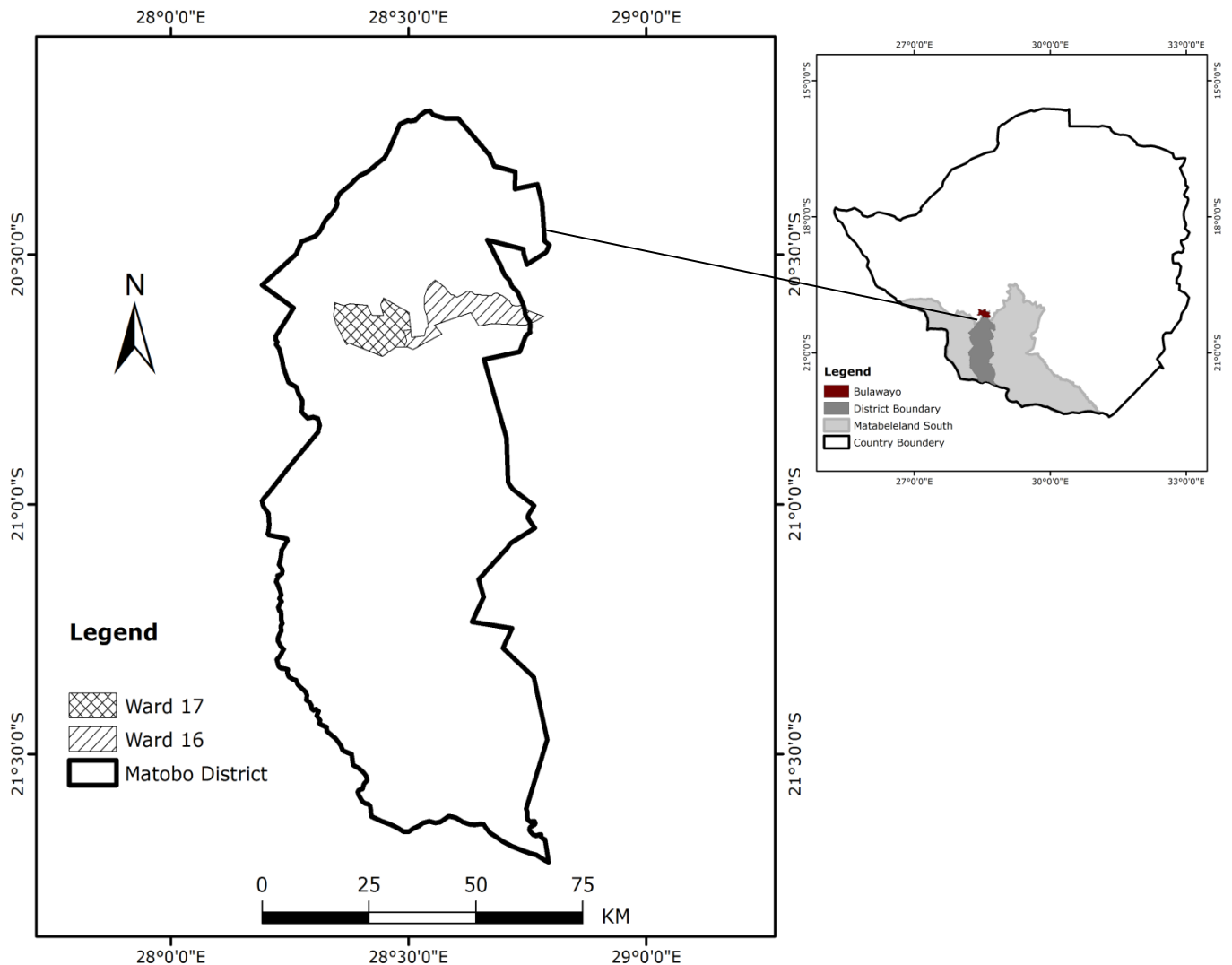


Figure 3.1: Location of Matobo District in Southwestern Zimbabwe

The population of primary schools in Matobo district is 72, both public and private schools, and 6 schools were sampled through convenience sampling, that is, schools lying in areas prone to periodic droughts and along the main road cutting across the district. In this case, schools were sampled according to ease of access, which is an aspect of convenience sampling (Ritchie & Lewis, 2012). Convenience sampling is whereby elements are drawn from a subpopulation

according to its accessibility and research interests (Gelo et al., 2008). From the sample of six schools, three were public schools and the other three were private (church) schools. All schools received maize from the the government and only two schools were randomly selected by the donors for food donations.

3.2.1 Socio-economic development in Matobo district

National policies determine the level of development from a national level cascading to household level. The level of poverty is very high in the rural areas of Zimbabwe due to inappropriate national policies that have been adopted. According to Manjengwa et al. (2016), 76% of rural households live below the Total Consumption Poverty Line, compared with 38% of urban households. The level of socio-economic development is also very low in Matobo district. Mutami (2015) pointed out that rural development is a composite of food security, employment, social and economic issues, which are basically the same human conditions issues which preoccupied Sen's work (1981). However, rural households have been denied these entitlements due to poor development policies. People in poverty are those who have low capacities in terms of health, education and social capital and suffer from chronic ill health or disabilities (Manjengwa et al., 2016). The State has failed to create conducive development policies and food security as evidenced by 23% of rural households living in extreme poverty (ZIMSTAT cited by Manjengwa et al., 2016). Low socio-economic development in Matobo district is a result of the following factors that are cascading from the national level.

a. Shortage of arable land

Matobo district has a rugged terrain. The area is very mountainous leading to a shortage of arable land. Most families have very small plots which are not suitable for sustainable agricultural activities. Mutopo (2014) pointed out that land is a critical resource for rural Zimbabweans whose livelihoods depend solely on agricultural activities. During the colonial era, the white minority took the bulk of the prime land and relegated the native majority to marginal and agro-ecologically poor land (Kanyeze et al., 2011, cited in Shumba, 2017). Soon after independence, the government of Zimbabwe failed to resettle people because of the Lancaster House Agreement. "In this agreement the British government under Thatcher agreed to meet part of the cost for the market-based instrument of land reform allowing for land to be bought back from the

white minority using the fair market value (FMV) principle of willing seller willing buyer” (Shumba 2017, p. 199).

b. Corruption

Socio-economic development is very low in the rural areas because of corruption. Resources meant for rural development are diverted for personal use by political leaders thereby denying rural people of important assets that can spearhead development (Phimister and Pilosof, 2017). “Most people still live in marginal areas because the government in the 1980s misappropriated some of the land reclamation funds by securing land for the ruling elite as opposed to the landless rural people” (Goebel, 2005, cited in Shumba, 2017, p. 201). This necessitated the British government under Blair to cease funding for the resettlement programmes. In Matobo district people still occupy marginal land that is not conducive for agricultural activities leading to low socio-economic development. It is also highlighted that approximately US\$2 billion was lost to corruption in 2012, equalling nearly one-sixth of the country’s GDP in that year (Cain, 2015). It has been stated that, whether it is grand or petty, corruption in any form leads to economic uncertainty and insecurity (Cain, 2015).

c. Economic structural Adjustment Programmes

In 1991, the Zimbabwean government adopted Economic Structural Adjustment Programmes (ESAP), which are economic reform packages that comprise loans provided by the International Monetary Fund (IMF) and the World Bank to Third World countries dealing with critical economic hardship (Shumba, 2017). ESAP led to retrenchments and fees were introduced for hospital and clinic services. In rural areas ESAP intensified poverty as most households failed to raise user fees for education and health. Most households failed to pay fees for basic services such as education and health. There were no remittances from urban areas due to retrenchments in the industrial sector. Magure (2015) highlighted that ESAP led to the erosion of social gains (for example in education and primary health) that were achieved during the first few years after independence. Matobo district was affected like other rural areas in Zimbabwe. Parents struggled to raise school and medical fees for themselves and their children and poverty continued to deepen. The government then suspended ESAP in 1996 because of its failure in revamping the

economy. It was estimated that in November 2008, up to 80% of the population in Zimbabwe was surviving on less than US\$2 per day (UNDP, 2008, cited in Manjengwa et al., 2016).

d. Authoritarian Nationalist Ideologies

National socio-economic development has been plummeting due to mismanagement of national assets. In 1997 the government adopted an authoritarian nationalist ideology by disbursing ZWD\$50 000 per genuine war veteran, and an added ZWD\$5 000 life time gratuity paid monthly (Shumba, 2017). In the following year, 1998, Zimbabwean troops were sent to fight a SADC cause in the Democratic Republic of Congo (DRC) war against Ugandan and Rwandan backed rebels. Shumba (2017, p. 211) argues that “this move was notpremeditated and it led to a furthered snowballing of the inflationary situation.” This further crippled the economy of the country because it was not budgeted for and more suffering was experienced by people due to poverty.

e. Fast Track Land Reform Programme

According to Magure (2015), one defining feature of the post-2000 economic era is that the economic policies crafted were generally laced with populist rhetoric. Since the British government had withdrawn the funds to carry out the ‘willing-seller, willing-buyer’ transactions, the Zimbabwean government, in 2000, embarked on the Fast Track Land Reform Programme (FTLRP) (Shumba, 2017). FTLRP was also marked with corruption, where the elite in the ZANU (PF) party became multiple farm owners and most of the general population failed to access land and remained in marginal areas such as Matobo district. Marginal areas receive below normal rainfall, have infertile soils and are overpopulated. FTLRP reduced productivity in the farms and decimation of agriculture led to the closure of almost all industries that were associated with it – such as agro-based textile industries (Magure, 2015).

f. Weather anomalies

Matobo district is in a semi-arid environment. In semi-arid areas, the increasing frequency and severity of droughts are characterised by the shift in the onset of the rains, and increasing frequency of mid-season dry spells (Murungweni et al., 2014). Poor rainfall distribution during the rainy season has increased drought frequencies thereby leading to food insecurity in the

district. Sango and Nhamo (2015) asserted that South western Zimbabwe is often characterised by weak institutional support and poor governance to enhance prospects for effective climate change adaptation. Most households are perceived to be vulnerable to climatic hazards due to a lack of capacity to diversify their livelihoods for sustainable adaptation to climate change.

g. Informal sector

Some of the households in Matobo district have joined the informal sector. They trade in wild fruits, vegetables and craft products. Makochekanwa (cited in Shumba, 2017) highlighted that the informal sector functions as the second economy of the country and it has escalated from 10% at independence in 1980 to 70% in 2008. However, most of the people in the informal sector are poor because of slow business activity. They realise little or no profits because people lack the buying power due to high unemployment and a shortage of cash.

h. Feminisation of poverty

Some of the households in Matobo district are headed by women and they are very poor due to a lack of assets. Zimbabwe is a patriarchal society where men have more power than women and men tend to have greater access to resources than women. This means that patriarchy disempowers women. During the FTLRP few women managed to get land and most households headed by women remained in marginal areas. Sen (as cited in Kangethe and Munzar, 2014) highlighted that women are more prone to poverty than men because they do not have power over their own income. Women end up failing to have control over their labour and resources in patriarchal societies and this leads to poverty. Kangethe and Munzar (2014) also argued that single mothers experience a higher risk of poverty because their income is not sufficient to support their children if they are the only breadwinners in the family

Therefore, “a vicious circle of bad policies has played an instrumental role in the deterioration of the business environment, causing negative implications for industry growth, foreign direct investment and employment” (Shumba, 2017, p. 215). According to Cain (2015), bad governance can both create and perpetuate poverty, especially in less developed countries, which are more vulnerable and this appears to be evident in the case of Zimbabwe.

3.3 Aim and Objectives of the Study

The aim of the study was to explore the effects of food insecurity on primary school children in Matobo district located in SW Zimbabwe. Of special interest was to highlight how the education of learners from food insecure households is affected. In order to achieve the aim of the study three objectives were formulated to clarify the focus of the study. The following are the specific objectives of the study:

- a. To explore teachers' experiences of food insecurity amongst primary school children in Matobo.
- b. To identify the reasons for food insecurity amongst primary school children in Matobo.
- c. To identify solutions to food insecurity amongst primary school children in Matobo

The following critical questions informed the above-stated objectives:

- i. What are teachers' experiences of food insecurity amongst primary school children in Matobo?
- ii. Why are primary school children experiencing food insecurity in Matobo?
- iii. How can food insecurity amongst primary school children be addressed in Matobo?

Question 1 sought to find out what teachers have observed and encountered whilst they are teaching with regard to food insecurity amongst children in the school. Teachers were interviewed to highlight how food insecurity affects the children whom they teach. Document analysis was also done, that is, the exercise books, school registers and mark schedules of food insecure children were analysed.

The second question focused on the determinants of food insecurity at household level and it was addressed by interviewing the teachers and parents of food insecure children to explore why they think children in Matobo experience food insecurity.

The last question was addressed by conducting interviews with the teachers and school administrators to find out on how food insecurity amongst primary school children can be addressed with a special focus on school feeding programmes.

Data for the study was generated largely through the lens of their parents and teachers given research ethics about research by accessing the vulnerable, which here comprises of children (Liamputtong, 2007). Whilst I acknowledge that it is a limitation, I weighed this limitation against the possible trauma that could result due to interviews with children about their food insecurity. Indeed beneficence, non-maleficence and human dignity (Cohen, Mannion and Morrison, 2018, p.127) are important ethical research principles.

3.4 Interpretive Paradigm

The school of thought that stresses the importance of interpretation as well as observation in understanding the social world is known as interpretivism (Ritchie & Lewis, 2012). An interpretive paradigm is concerned with “understanding the world as it is from subjective experiences of individuals through interviews” (Moriarty, 2011, p. 5). This implies “a researcher’s understanding of the events as related by participants” (Corbin & Strauss, p. 48). The researcher interviewed participants (teachers, school administrators and parents) in order to develop interpretations of the meanings, which constitute their social world. One of the assumptions of the interpretive paradigm is natural science inquiry methods are not always appropriate for gaining insight into human interactions. Another assumption is many human actions cannot be predicted or controlled; attempts to manipulate and control others are not ethical. The other assumptions are that “there is no single reality of life-knowledge is created by individuals living in an historical era and gaining understanding or reflecting on meaning will serve as a catalyst for action” (Karin & Suzanne, 2016, p. 21). Therefore, the basis of the interpretive paradigm is reflected in practices which emphasise the importance of understanding people’s perspectives in the context of the conditions and circumstances of their lives (Ritchie & Lewis, 2012). The interpretive paradigm seeks to understand people’s lived experience from the perspective of people themselves, which is often referred to as the emic perspective or the ‘inside’ perspective. This involves studying the subjective meanings that people attach to their experiences (Hennink et al., 2011) which is the reason why interpretivism as a research paradigm, is best suited to the study. The effects of food insecurity on children’s education can be clearly explained by teachers and parents who are always in contact with the children. They are aware of the causes and effects of food insecurity in relation to children’s education.

The researcher can get detailed information from the perspectives of teachers and parents about the determinants of food insecurity in the communities and how it affects children in their learning. Morgaine (1992) states that practitioners who incorporate the interpretive paradigm see individuals as possessing knowledge that has come from their own life experiences. The interpretive paradigm thus enables one to understand social interactions and events through the exploration of lived experiences in order to reveal the connections between the social, cultural and historical aspects of people's lives and to see the context in which particular actions take place (Morgaine, 1992; Ritchie & Lewis, 2012). "The home environment of children has a great bearing on their learning because reality is socially constructed as people's experiences occur within social, cultural, historical or personal contexts"(Hennink et al., 2011, p. 56). This connection is determined as one engages in research within the interpretive paradigm.

Additionally, the interrelatedness of different aspects of people's lives is a very important focus of qualitative research (Ritchie & Lewis, 2012).

3.5 Qualitative Research Methodology

As stated this study is within the interpretivist paradigm because interpretivism attempts to derive people's constructs from the field by an in-depth examination of the phenomenon of interest (Moriarty, 2011). Qualitative research was selected as the best approach because it is the "study of things in their natural setting, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them" (Denzin & Lincoln, 2005, p. 33). The phenomenon in the current research was food insecurity and it was explored as it occurs. Participants are studied in their natural settings, to identify how their experiences and behaviour are shaped by the context of their lives, such as social, economic, cultural or physical context in which they live (Hennink et al., 2011). According to Myers (2009, p. 5) one of the key benefits of qualitative research is that it allows a "researcher to see and understand the context within which decisions and actions take place". The researcher manages to see the natural environment that shapes the behaviour of the participants. When participants are studied in their environment one would manage to see contextual influences on behaviour, that is, the study will address 'why' questions to explain and understand issues or 'how' questions that describe process or behaviour (Hennink et al., 2011, p. 54). It is argued that people develop a personal framework of beliefs and values over their lives with which they selectively and subjectively build meaning and it is this

framework that the qualitative researcher is interested in learning about (Heyink & Tymstra, 1993).

Therefore, the aim of qualitative research is to learn about how and why people behave, think, and make meaning as they do (Ambert et al., 1995). Qualitative research was used in this study since it seeks depth rather than breadth, in other words, it aims to provide rich or “thick” descriptive accounts of the phenomenon of food insecurity, which is under investigation (Gelo et al., 2008). In-depth interviews and focus group discussions were the tools used to examine people’s experiences of food insecurity amongst primary school children. This was explored in detail because in qualitative research it is virtually impossible to understand why someone did something or why something happened in a given environment without talking to people about it (Myers, 2009; Hennink et al., 2011; Creswell, 2014). These qualitative research methods were used to explore the nature of children’s vulnerability to food insecurity in primary schools of Matobo, south western Zimbabwe. Qualitative research was chosen because its main distinctive features are that it allows one to identify issues from the perspective of the participants and understand the meanings and interpretations that they give to behaviour, events and objects (Hennink et al., 2011). The phenomenon is understood from the perspective of those close to the phenomenon and this is referred to as the interpretive approach.

3.6 Research Design: Case Study Approach

According to Moriarty (2011), interpretivists favour qualitative methods such as case studies because it’s a better way of getting at how humans interpret the world around them. The case study strategy is suited to qualitative research as “the focus is on human interpretations and attributed meanings” (Walsham, 1995, cited in Oliver, 2010, p. 87). Yin (as cited in Oliver, 2010, p. 76) defines a case study as “an in-depth empirical inquiry that investigates a contemporary phenomenon within its real-life context.” This implies that the case study favours the collection of data in natural settings and here in the current study, the natural setting was Matobo. Eisenhardt (1989) highlighted that the case study is a research strategy which focuses on understanding the dynamics present within single settings. This implies that a case study is an intensive study of a single unit for the purpose of understanding a larger class of similar units (Gerring, 2004; Walle, 2015). A unit refers to a spatially bounded phenomenon such as a

country, region, district or school. Yin (2014, p. 105) further states that case studies are pertinent when one research addresses either a descriptive question – “What is happening or has happened?” – or an explanatory question – “How or why did something happen?” The case study was the preferred strategy as the researcher wanted to know: what are teachers’ experiences of the nature of food insecurity amongst children in Matobo? why are children experiencing food insecurity in Matobo? and how can food insecurity amongst children be addressed in Matobo? The researcher undertook a case study of food insecurity amongst primary school learners in the Matobo area.

3.7 Research Tools and Data Generation

Qualitative techniques for eliciting data from sources can generally include observation, interviewing, and collecting or gaining access to documents, artifacts, or environments rather than relying on a single data source (Creswell, 2014). In this study, the qualitative research tools for data collection included semi-structured interviews, focus group discussions and school documents.

3.7.1 Interviews

“An interview is a verbal interchange, often face to face, though the telephone may be used, in which an interviewer tries to elicit information, beliefs or opinions from another person” (Kumar, 2011, p. 144). Magwa and Magwa (2015, p. 78) asserted that “interviews are particularly useful for getting the story behind a participant’s experiences, that is, it is a powerful means of obtaining information and gaining insights into people’s behaviours, beliefs and attitudes.” The interviewer can pursue in-depth information around the topic. A given topic is discussed through a question-and-answer format in detail by two people. There are three different types of interviews, that is, structured interviews, semi-structured interviews and unstructured interviews. This study used semi-structured interviews and the reasons have been highlighted under the subheading: semi-structured interviews.

i. Structured interviews

Structured interviews involve the use of pre-formulated questions, usually asked in a specific order, and sometimes within a specified time limit and participants are given little freedom in response (Myers, 2009; Walle, 2015). Considerable planning is required so that all the important

questions are included in the script. A specific sequence of questions and the pace of the interview tend to be pre-established during the planning stage, that is, it is a questionnaire administered by an interviewer who is not allowed to deviate in any way from questions provided (Esterberg, 2002; Magwa & Magwa, 2015). Only one format is used for all the interviews and there is consistency across all the interviews. This implies that interviews are carried out rigidly, according to protocol, that is, questions are asked exactly as written, same wording and same sequence is used (Gray, 2004). The interviewer does not deviate from the protocol, in other words the same questions are asked of all respondents. Esterberg (2002) further highlighted that in structured interviews, although at least some of the questions may be open-ended, allowing interviewees to respond in their own words, they may also be closed-ended, pre-coded or a fixed choice forcing interviewees to choose between predetermined responses. Structured interviews are normally used in quantitative research during surveys. Structured interviews are considered ‘qualitative’ when the responses given by participants are open-ended, however, some qualitative researchers argue that structured interviews are unnatural and restrictive and, therefore, should not be used in qualitative research (Eriksson and Kovalainen, 2008). “The interviewers do not reveal any personal information about themselves because personal revelations on the part of the interviewer are said to produce bias, since the interviewees will tend to give the responses that they think the interviewer wants and this is referred to as social desirability bias” (Esterberg, 2002, p. 136). This instrument was not used in the collection of data because it does not address the “why” and “how” aspects of food insecurity which are key to the study. The researcher was of the view that structured interviews will not lead to the in-depth exploration of the phenomenon in the study and they were therefore not used.

ii. Semi-structured interviews

Semi-structured interviews (sometimes called in-depth interviews) are much less rigid than structured interviews and the goal is to explore a topic more openly and to allow interviewees to state their opinions and ideas in their own words (Esterberg, 2002). The researcher conducted a total of 30 semi-structured interviews, that is, in each school three teachers of vulnerable children were interviewed once and two administrators were interviewed once per school. The average time per interview was 50 minutes. Some feminist scholars have argued that these interviews are

a particularly good way to study women and marginalized groups as they focus on both ‘what’ and ‘how’ questions which give participants the opportunity to tell their own stories (Esterberg, 2002; Eriksson & Kovalainen, 2008). In semi-structured interviews, there is no strict adherence to pre-formulated questions since the order of the questions can be changed depending on the direction of the interview and new questions can emerge during the conversation (Corbetta, 2003; Myers, 2009). Semi-structured interviews were explained as follows by Magwa and Magwa (2015, p. 74):

The interviewer is free to conduct the conversations as he/she thinks fit, ask questions deemed appropriate in words considered the best, ask for clarification if answers unclear to prompt respondents to elucidate further if necessary. Thus, a researcher can probe deeper into given situation, explain or rephrase the questions if respondents are unclear about questions.

In this study the main aim was to facilitate the interviewees sharing their perspectives, stories and experience regarding primary school children’s vulnerability to food insecurity. Semi-structured interviews were used to gather data from administrators and teachers of food insecure children and the researcher made notes to document the interviews. “While the researcher does try to ask each participant a certain set of questions, he or she also allows the conversation to flow more naturally, making room for the conversation to go in unexpected directions” (Hesse-Biber & Leavy, 2011, p. 102). Semi-structured interviews enabled the researcher to explore teachers’ experiences of the nature of food insecurity amongst children and to explore reasons for food insecurity amongst children through open-ended questions.

Semi-structured interviews are based on a series of open-ended questions about a series of issues the researcher thinks are relevant to the topic (Chattopadhyay, 2000). “Open-ended questions allow individual participants some latitude and freedom to talk about what is of interest or importance to them because they often have information or knowledge that may not have been thought of in advance by the researcher” (Hesse-Biber & Leavy, 2011, p. 102). Other questions might emerge from the conversation between interviewer and interviewee/s. The advantages of semi-structured interviews are numerous. The interviewer has the freedom to probe the

interviewee to elaborate on the original response, to follow a line of inquiry introduced by the interviewee and if the interviewee has difficulty answering a question or provides only a brief response, the interviewer can use cues or prompts to encourage the interviewee to consider the question further (Neuman, 2000). The duration of each semi-structured interview in the study was 45 minutes on average.

Table 3.1 Research imperatives and strategies used in the study: Semi-structured interviews

CRITICAL QUESTIONS	REASON FOR DATA BEING COLLECTED	RESEARCH STRATEGY (Instrument)	DATA SOURCE	NUMBER OF SOURCES	SITE OF DATA SOURCE
1. What are the signs of food insecurity amongst your learners?	To capture the effects of food insecurity on learners.	Semi-structured interviews.	Teachers of food insecure children. School administrators	5 teachers per school. 2 Administrators per school.	Schools in the Matobo District
2. What do you think are the causes of food insecurity in the community?	To ascertain factors that contribute to food insecurity amongst the learners.	Semi-structured interviews.	Teachers of food insecure children. School administrators.	3 teachers per school. 2 Administrators per school.	Schools in the Matobo District
3. What kind of supplementary feeding is being implemented	To examine the effectiveness of schools' supplementary feeding	Semi-structured interviews	Teachers of food insecure children. School	3 teachers per school. 2 Administrators	Schools in the Matobo District

or should be implemented in schools?	programmes in curbing food insecurity and enhancing learning.		administrators.	per school.	
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iii. Unstructured interviews

Unstructured interviews are conducted in a field setting and they tend to be more spontaneous and free-flowing, with topics arising from the situation or behaviour at hand (Esterberg, 2002). They are normally used by seasoned researchers since there are no questions prepared in advance, questions arise more naturally (Esterberg, 2002). Unstructured interviews are like ‘real’ conversations, they are informal in nature. They are used to explore topics more intensively and broadly from the participant’s point of view as the interviewees are encouraged to speak openly, frankly and give as much detail as possible (Eriksson and Kovalainen, 2008). This implies that the researcher should be a good listener and be in a position to note down new and interesting data being given by the interviewee. This instrument was not used in the collection of data because it gives participants great freedom to respond in any manner they see fit, thereby sometimes failing to address the key issues of the study (Walle, 2015). Additionally, I did not feel comfortable and sufficiently confident to conduct an interview without having prepared questions in advance.

Table 3.2: Types of interviews (Myers, 2009, p. 124)

Interview Type	Description
Structured interviews	The use of pre-formulated questions, strictly regulated with regard to the order of the questions, and sometimes regulated with regard to the time available.
Semi-structured interviews	The use of some pre-formulated questions, but no strict adherence to them. New questions might emerge during the conversation.
Unstructured interviews	Few if any pre-formulated questions. In effect interviewees have free

	rein to say what they want. Often no set time limit.
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3.7.2 Focus group discussion

A focus group discussion is “a research technique where a group of people are convened to brainstorm ideas in a free-wheeling discussion of a topic determined by the researcher” (Walle, 2015, p. 54). The aim of focus group discussion is to gain a broad range of views or collective views on the research topic over a period of 60-90 minutes, and to create an environment where participants feel comfortable to express their views (Hennink et al., 2011). During focus group discussions more insights are generated on the topic due to its interactive nature. What makes the discussion in focus groups more than the sum of separate individual interviews is the fact that the participants both query each other and explain themselves to each other, thereby generating a variety of opinions on a certain issue (Morgan, 1996; Magwa & Magwa, 2015). There is a variation on the views on group size: a focus group is a meeting of between four and eight individuals (Bedford & Burgess, 2001, cited in Hopkins, 2007); a focus group involves between six and ten people (Cameron, 2005, cited in Hopkins, 2007). Kitchin and Tate (as cited in Hopkins, 2007) asserted that approximately ten volunteers are required in a focus group discussion and Wilson (1997) said it is a group of four to twelve people. Namey and Mitchell (2013) pointed out that there is no hard-and-fast rule about the size of focus groups, thus it can range from six to twelve individuals with a few outliers on either end. In this study, each focus group had four to eight participants and the ratio was 30% males and 70% females on average. This is because a smaller group gives each participant more time to discuss her or his views and experiences on the topics in which they all are highly involved and small groups also make it easier for the moderators to manage the active discussions that often accompany high levels of involvement. Focus groups also have some specific ethical issues. According to Esterberg (2002) for participants to speak freely, all participants in a focus group should sign a confidentiality statement in which they promise not to reveal information outside of the group or beginning the focus group with a statement of the ground rules for participation, including the confidentiality pledge. In this study the participants were also asked to sign a confidentiality statement.

The researcher had a total of 6 focus group discussions with parents of vulnerable children, that is, one focus group discussion per school. The most common rule of thumb is that projects consist of four to six focus groups because the data is “saturated” and little new information emerged after the first few groups (Morgan, 1996; Creswell, 2014). “The reasons for combining individual and group interviews typically point to the greater depth of the former and the greater breadth of the later” (Crabtree et al., 1993 cited in Morgan, 1996, p. 138). Through group interactions, the researcher managed to explore participants’ perceptions, attitudes, feelings and ideas on the topics of interest related to food insecurity. The researcher made notes during focus group discussions with the permission of the participants.

Table 3.3: Research imperatives and strategies used in the study: Focus group discussions

CRITICAL QUESTIONS	REASON FOR DATA BEING COLLECTED	RESEARCH STRATEGY (Instrument)	DATA SOURCE	NUMBER OF SOURCES	SITE OF DATA SOURCE
1. What are the signs of food insecurity amongst your children?	To capture the effects of food insecurity on learners.	Focus group discussion	Parents of food insecure children.	1 focus group discussion per school.	Schools in the Matobo District
2. What do you think are the causes of food insecurity in the community?	To ascertain factors that contribute to food insecurity amongst the children.	Focus group discussion	Parents of food insecure children.	1 focus group discussion per school.	Schools in the Matobo District
3. What kind of supplementary feeding is being	To examine the effectiveness of schools’ supplementary	Focus group discussion	Parents of food insecure	1 focus group discussion	Schools in the Matobo

implemented or should be implemented in schools?	feeding programmes in curbing food insecurity and enhancing learning.		children.	per school.	District
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3.7.3 Documents

Documents were used as an additional data collection tool to gather information. “A document is any symbolic representation that can be recorded or retrieved for analysis” (Myers, 2009, p. 154). Document analysis is a form of qualitative research in which documents are interpreted by the researcher to give voice and meaning around a topic (Owen, 2014). This implies that document analysis involves selecting (as opposed to generating) documents, both textual and visual, and analyzing the contents of it (Guest et al., 2013). Document content is in the form of words, sentences, phrases, numbers and this content can be counted and classified and compared (Alasuutari, Bickman & Brannem, 2009). For qualitative researchers, documents such as exercise books and registers are rich sources of data. Myers (2009) highlighted that documents are classified into three main categories, firstly, personal documents which include individuals’ letters, diaries, notes, drafts, files and books. Secondly, private documents which include those that are produced by private organisations for internal purposes such as minutes of meetings, personnel records, budgets and memos. Lastly, there are public documents which are produced for public consumption, such as annual reports, media statements or articles in newspapers. They allow a researcher to build a richer picture of a given phenomenon than could be obtained by interviews and fieldwork alone (Myers, 2009).

The researcher analysed personal and private documents: exercise books of vulnerable children and records of marks (marks schedule) of these children and also the class registers for children’s absence from school. Exercise books for four main subjects, that is, English, Mathematics, General Paper and IsiNdebele were examined in order to assess the following:- amount of work written; children’s performance; teachers’ comments and appearance of the books i.e. covered or

not covered. Exercise books for four main subjects mentioned were analysed. The records of marks were also analysed in order to compare and contrast children's performance and to find out how often they write exercises and tests. The class registers showed school attendance. These documents assisted the researcher to uncover meaning, develop understanding and discover insights relevant to the research problem (Bowen, 2009). The procedure of analysis entailed "finding, selecting, appraising (making sense of), and synthesizing data contained in documents" (Bowen, 2009, p. 23). For example, Cynthia (one of the food insecure learners) was always absent from school, she came twice per week on average, her marks were below the class average, she could not copy notes from the chalkboard, she failed to write in full sentences, her exercise books were few and she had less written work. Hesse-Biber and Leavy (2011) highlighted that documents can indicate the conditions that impinge upon the phenomena currently under investigation. For example, the quantity and quality of children's school exercise books are good indicators of the socioeconomic status of children. Document analysis was used in combination with the analysis of data from semi-structured interviews and focus group discussions as a means of triangulation. "Documents may corroborate interview data, or they may refute them, in which case the researcher is 'armed' with evidence that can be used to clarify, or perhaps, to challenge what is being told" (Owen, 2014, p.15). This shows that documents provide background and context, additional questions to be asked, supplementary data, a means of tracking change and development and verification from other data sources (Bowen, 2009).

3.8 Sampling

Purposive sampling was used to sample the parents and teachers of vulnerable children, and the school administrators. These were considered as information-rich sources on how food insecurity affects children academically. "Purposive sampling is exercised to specifically pick information-rich cases, that is, identifying and selecting individuals or groups of individuals that are especially knowledgeable about or experienced with a phenomenon of interest" (Bloor & Wood, 1996 cited in Chattopadhyay, 2000, p. 310). Therefore, in purposive sampling "the researcher intentionally selects participants who can contribute an in-depth, information-rich understanding of the phenomenon under investigation" (Karin & Suzanne, 2016, p. 24). According to Silverman (2008, p. 129) purposive sampling allows us to choose a case because it illustrates some feature or process in which we are interested. A qualitative sample should reflect diversity

rather than being representative because it is always a good idea to elicit multiple perspectives on a given research question (Guest et al., 2013). “Therefore, when the researcher is involved in generating data, he/she should be asking ‘Who might I be leaving out?’, ‘Might there be other types of people or other situations that are likely to give rise to differing experiences, perspectives or issues that are of relevance to my research question?’” (Barbour, 2008, p. 123). In this study, teachers and parents of vulnerable children and school administrators were identified as the rightful information-rich cases that would give relevant data based on the research objectives. Guest et al. (2013, p. 67) also highlighted that “Ask yourself: What specific individuals or types of individuals (i.e. roles, occupations) might know a lot about my research topic in the study site?” The criterion of choosing participants is based on the research objectives or questions.

Qualitative studies do not usually have predetermined sample sizes, thus, sampling stops when a thorough understanding of the phenomenon under study has been reached, an end point that is called saturation (Kuper et al., 2008). Sample sizes in qualitative research are often small since information richness is often the most important factor in the selection of samples and a frequently used guideline for knowing when to stop sampling is referred to as “saturation”. “Saturation is when, in qualitative research data collection, the researcher stops collecting data because fresh data no longer sparks new insights or reveals new properties” (Creswell, 2014, p. 248). In other words, saturation is a theoretical principle used to determine the number of participants to recruit for qualitative studies, thus, it is the point at which the information collected begins to repeat itself (Hennick et al., 2011). The research process stops when gathered data repeats itself. Malterud and Siersma (2016) asserted that a commonly stated principle for determining sample size in a qualitative study is that N should be sufficiently large and varied to elucidate the aims of the study. However, this assertion provides no guidance especially during proposal writing. Saturation is quickly achieved in homogeneous samples because groups that are alike on various dimensions are more likely to think in similar ways and have similar experiences (Guest et al., 2013). Case studies tend to have smaller sample sizes because the study is more intense and deep in data collection (Guest et al., 2013). According to Marshall et al. (2013, p. 20) “single case studies should generally contain 15 to 30 interviews”. The researcher agrees with this assertion because too many interviews can be counterproductive. The

maximum should be where additional interviews fail to produce substantial new insight (Marshall et al., 2013). In each school three teachers of vulnerable children were interviewed and two administrators were interviewed and there was one focus group discussion with parents of vulnerable children. This implies that in the whole district there were thirty interviews and six focus group discussions. Document analysis for all vulnerable children (three per school) was also done in the six schools. Exercise books for four main subjects, that is, English, Mathematics, General Paper and IsiNdebele including marks schedule and attendance registers were examined per child per school including giving a total of 108 documents for the six schools.

Convenience sampling was used to choose the sample schools. Schools situated along the main Bulawayo-Kezi road were chosen for easy accessibility. Magwa and Magwa (2015) asserted that convenience sampling involves choosing the individuals, who are easily accessible to the researcher, to serve as respondents until the required sample size has been obtained.

3.9 Method of Data Analysis

Kumar (2011, p. 202) stated that “data analysis involves analyzing the contents of interviews or observational field notes in order to identify the main themes that emerge from the responses given by the participants or the observation notes made by the researcher.” Therefore, the analytic process can be described as “breaking down data into smaller pieces by identifying meaningful units, grouping these together in categories, and developing relationships among the categories in such a way that patterns in the data are made clear” (Kumar, 2011, p. 203). A meaningful unit is a segment of text that is comprehensible by itself and contains one idea, episode or piece of information (Magwa & Magwa, 2015, p. 43). These meaningful units are themes which summarize all the views the researcher has collected.

In this study, the data was broken into various meaningful units or themes in relation to the critical questions of the research. Ambert et al. (1995) and Hesse-Biber & Leavy (2011) pointed out that in qualitative research; the masses of data are usually broken down into smaller units and then reassembled to call attention to patterns, themes and concepts. However, some meaningful units might emerge from close examination of the data, guided by the researcher’s emergent understanding and by techniques such as questioning and systematic comparison among data elements (Bradley, 1993). The researcher began preliminary data analysis in the field, that is,

making field notes of important aspects and tape recordings during interviews and intense analysis took place after leaving the research site. The researcher followed the following steps when analyzing data as highlighted by Neuman (2000, p. 123):

- Read and annotate transcripts
- Identify themes
- Developing a coding scheme
- Coding the data

3.9.1 Presentation of Results

The findings for each of the critical questions were presented in response to each of the research questions which have been stated at the beginning of chapter 3. The main themes that emerged are reported on in the presentation of the key findings, and appropriate verbatim quotes have been used as evidence to support the findings.

3.10 Limitations of the study

The study is qualitative and it was undertaken in only one context, namely Matobo. Therefore, one of the limitations of this study is that generalizations cannot be applied to whole population from this case study findings; however, the findings can be transferred to other situations and organisations to assist in explaining phenomena, but they cannot be viewed as predictors of future situations (Oliver, 2010).

The research is limited to a small number of schools in a rural area and the results are not generalizable to the whole population in other areas and to urban primary schools where poverty is on the rise and food insecurity is becoming rife.

The delimitation of a study refers to the boundaries set for the study or it explains the way a study is limited. In the case of the present study, the main delimitation was the choice of only a few primary schools in one of six administrative districts in Matabeleland Province of Zimbabwe.

3.11 Ethical Considerations of the Study

Ethics are principles of right and wrong that a particular group accepts (Bogdan & Biklen, 1992 cited in Bresler, 1995) and ethical considerations were important for this study. Silverman (2010,

p. 434) defines ethics in research as the “guidelines or principles relating to good professional practice”. Research codes of ethics address individual rights to dignity, privacy, and confidentiality and avoidance of harm (Bresler, 1995). Hennick et al. (2011, p. 132) highlighted three core principles that should be upheld when one is carrying out research and these provided guidance for the researchers:

- i. *Respect of persons* – participants should be treated with dignity and they should enter into research voluntarily with adequate information concerning the research.
- ii. *Benefice* – the research should benefit the wider society and minimize potential risks to research participants.
- iii. *Justice* – researcher should ensure that research procedures are administered in a fair, non-exploitative and well-considered manner.

The application of these principles to the conduct of research leads to the following considerations as pointed out by Hennick et al. (2011, p. 63) and the current research utilized these:

- a. *Informed consent* – participants should be provided with sufficient information about research, in a format that is comprehensible to them, and make a voluntary decision to participate in a research study.
- b. *Self-determination* – participants have the right to determine their own participation in research, including the right to refuse participation without negative consequences.
- c. *Minimization of harm* – researchers should not do any harm to participants or put them at risk.
- d. *Confidentiality* – researchers should ensure that all data records are kept confidential at all times.

These codes of ethics ensured that the participants entered the research project voluntarily, that they understood the nature of the study on food insecurity and they were aware of the value of their involvement and the participants are not exposed to risks that were greater than the gains that they might derive (Bogdan & Biklen, 1992). The researcher obtained permission from the Ministry of Education, Sports, Arts and Culture and from traditional and political leaders as these are the gate keepers for this study. The researcher also ensured informed consent and the

protection of the participants from harm through the signing of relevant forms as explained above.

The researcher designed a form that contained the researcher's description of the study, the reasons for carrying out the study and what was going to be done with the findings and the subject's signature on the form was taken as evidence of informed consent (Bogdan & Biklen, 1992). Confidentiality was achieved by the use of anonymity and pseudonyms so as not to embarrass or harm participants. The researcher did not interview pupils/learners, but rather their teachers and parents so as to protect the vulnerable.

Other ethical issues considered in the research are as listed below:

- Obtaining the ethical clearance certificate from the University (Protocol reference number: HSS/0330/016D) to conduct research in Matobo district – Appendix A.
- Obtaining permission from the Ministry of Primary and Secondary Education for Matabeleland South Region to conduct research in Matobo district – Appendix B.
- Disclosing to the school administrators and teachers the details of the study in advance and my personal identity card during my preliminary visits to the schools. The purpose of the investigation was explained in the consent letter signed by the participants.
- Writing to the Headmasters of the schools to ask for permission to visit the schools to conduct research. All the school administrators signed the consent letters – Appendix H.
- Writing letters to the teachers of food insecure children to get their consent to interview them – Appendix I.
- Writing a letter to the parents of food insecure children to get their consent to interview them – Appendix J.

3.11.1 Validity

According to Creswell and Miller cited by Creswell (2014, p. 201) “validity is one of the strengths of qualitative research and is based on determining whether the findings are accurate from the standpoint of the researcher, the participant or the readers of an account.” The term that

refers to validity in qualitative research is trustworthiness. One way to check the validity/trustworthiness of research findings is to employ triangulation, that is, using two different methods to get at the same research question and looking for convergence in research findings (Hesse-Biber & Leavy, 2011). Triangulation is defined as an attempt to map out or explain more fully, the richness and complexity of human behavior by studying it from more than one standpoint (Cohen & Manion cited by Magwa & Magwa, 2015). The reason for triangulation is to partially overcome the deficiencies that flow from one investigation or one method (Cho and Allen, 2006). In this research, interviews, focus group discussions and document analysis were used to ensure validity. Multiple informants and multiple methods of data gathering within a same study are themselves recursive checks against the trustworthiness of the researcher's interpretations (Creswell, 2014). In triangulation, the researcher uses more than one research method, two or more techniques are used to gather data so as to gain a 'fuller' picture of what is happening (Myers, 2009, p. 10) as I have done in this study. The convergence or agreement between two methods enhances the belief that the results are trustworthy (Creswell, 2014). The depth associated with qualitative research, coupled with researcher's efforts to triangulate and cross-check data, gives the methodology strength in the area of trustworthiness (Walle, 2015). In addition, the use of quotations, as is evident in the study, is often seen as a means of validating the issues reported, to show that they were indeed evident in the data in the way the researcher described, and this is an effective tool to demonstrate a study's trustworthiness (Hennink et al., 2011).

3.11.2 Reliability

Reliability is concerned with the question of the extent to which one's findings will be found again, thus, if the inquiry is replicated, would the same findings be the same (Magwa & Magwa, 2015). Reliability is a concept to evaluate quality in quantitative study with the "purpose of explaining" while quality in qualitative study has the purpose of "generating understanding" (Stenbacka, 2001, p. 242). Therefore, the difference in purposes of evaluating the quality of studies in quantitative and qualitative research is one of the reasons that the concept of reliability is irrelevant in qualitative research (Golafshani, 2003). Some qualitative researchers seem to think that the qualitative method in itself assures reliability while other qualitative researchers seem to think that reliability within qualitative research is an unattainable and irrelevant demand (Brock-Utne, 1996, p. 613). It is further argued by Stenbacka (2001, p. 552) that the basic

distinction that makes reliability irrelevant is the notion of “measurement method”, which is not relevant in qualitative research.

It has been also observed that the concept of reliability is misleading in qualitative research, that is, if the study is discussed with reliability as a criterion, the consequence is rather that the study is no good (Stenbacka, 2001). In qualitative research terms such as Credibility, Neutrality or Confirmability, Consistency or Dependability and Applicability or Transferability are to be the essential criteria for quality (Lincoln & Guba, 1985). Furthermore, since reliability concerns measurements then it is problematic in qualitative research where human behaviour is never static (Merriam, 1995; Golafshani, 2003). In revealing the congruence of reliability and validity in qualitative research, Lincoln and Guba (1985) cited by Golafshani, (2003, p. 601) state that “there is no trustworthiness without reliability, therefore, reliability is a consequence of trustworthiness in any study.”

3.12 Conclusion

This chapter began with the explanation and justification of the use of a qualitative research approach for the study with reference to the critical questions. The aim and objectives of the research were stated, together with the critical research questions that guided the study. It was highlighted that schools were sampled using convenience sampling. It has also been stated that the participating teachers, school administrators and parents were identified using purposive sampling to get people who are especially knowledgeable about or experienced with the phenomenon of interest for the study, namely food insecurity amongst primary school children. Research methods and research tools used in the data generation exercise were explained. Lastly issues of ethics, validity and reliability as well limitations and delimitations of the study were discussed. Chapter Four, next, presents the findings of the study.

CHAPTER FOUR:

FINDINGS

4.1 Introduction

This chapter presents an analysis of the findings for the study on primary school children's vulnerability to food insecurity in south western Zimbabwe in Matobo district. There were three critical objectives in the study. Firstly, the study explored teachers' experiences of food insecurity amongst primary school children in Matobo. The second identified the reasons for food insecurity amongst primary school children in Matobo. The third objective identified solutions to food insecurity amongst primary school children in Matobo district. This chapter thus responds to three critical questions: what are teachers' experiences of food insecurity amongst primary school children in Matobo? why are primary school children experiencing food insecurity in Matobo? and how can food insecurity amongst primary school children be addressed in Matobo? The data for these three questions are presented thematically below.

4.2 Teachers' experiences of food insecurity in Matobo district

Teachers have had numerous experiences of food insecurity amongst their learners. Teachers were of the view that food insecurity has affected children in different ways and this has compromised the teaching and learning process. Teachers' experiences revealed that there are social, physical & mental and time-scale effects of food insecurity amongst children.

4.2.1 Experiences of the psychosocial (social and psychological) effects of food insecurity amongst primary school children

Food insecurity is very rife in Matobo district and learners resort to violence and truanting to access food. One the teachers, Mr Ncube, indicated that on average twenty out of thirty five children, the majority, are food insecure in his class. Food insecure children lack food that can curb their hunger. He explained that children go to school on empty stomachs as they come from households where they have only one meal per day, generally in the evening. Mr. Ncube, the teacher, noted:

“Learners created a scene this year on sports day. As we were feeding them after sports day, they were scrambling for bread and orange juice with some even exchanging blows because of that. When asked why they were fighting they said they had not eaten anything in the morning.”

The behaviour of learners shows desperation due to high levels of food insecurity. It was evident that they cannot afford to lose the opportunity for food that they can possibly lay their hands on and they resorted to violence to obtain the food on sports day.

Another of the teachers, Mr. Dube, also explained: *“We have since suspended afternoon lessons for grade seven pupils because of shortage of food. As a grade seven teacher I realised that most of the concepts taught in the afternoon were not well grasped as some children were sleeping or absconding.”*

Hunger causes children to truant from school. They leave school to search for food as a result of hunger and they end up losing lesson time as they are not present in class when teaching is occurring thus in the above primary school, afternoon lessons have been removed from the school timetable, reducing instruction time for the learners.

Food insecure learners also become isolated, they also resort to begging out of desperation during the school breaks as pointed out by one of the teachers (Mr. Mbiba):

“Most of the food insecure children in this school- they look lonely. They don’t play with others during break time and lunch time. They just remain in class and sleep. They are in a terrible situation. At times they beg for food from other learners. I feel pity for these children.”

The results also show that some of food insecure children steal other children’s food due to hunger and they also beg for food from their class mates out of desperation to quell their hunger pangs.

Mr. Mthethwa explained: *“I have since observed that learners who normally steal food from other children... it is the food insecure ones. When you ask them why they did that, the answer is hunger. It becomes too difficult to punish them, so I normally do counseling sessions so that they desist from stealing.”*

Miss Manzini added: “When other children are busy playing at the grounds during break-time or lunch time, normally, the food insecure children remain or return to class to search the bags of other children looking for food or money to buy food. It is really a difficult scenario to deal with. In most cases when there is such misdemeanor, we do counseling to such children. It is unfortunate that they tend to repeat such cases.”

It is evident from above that the teachers know the cause of the theft to be triggered by learners' hunger but their responses of counseling for the theft does not resolve the problem of learner' hunger. This quote also shows that food insecure learners end up becoming social misfits because they are caught up in criminal activities such as stealing. The major drive of such delinquency and theft, is hunger and counseling sessions hardly bare positive results because of the perennial hunger.

4.2.2 Experiences of the physical and academic performance effects of food insecurity amongst primary school children

Teachers and parents shared their experiences of the numerous physical effects of food insecurity amongst children and these included fainting, stomachaches, headaches, falling asleep and missing out on lessons.

Weakness and Fainting in school in the morning

The results indicated that some children faint at assembly points as a result of hunger and the long distances that they have travelled to school on an empty stomach. A teacher, Miss Nyoni, stated it is more prevalent during summer due to hunger and heat exhaustion:

“At assembly points we normally have incidences where some of the food insecure learners faint due to hunger. This normally occurs during third term, as from September to early December when it is very hot.”

One of the parents, Mrs Ndaba, also highlighted that after school, the children have little food which is not nutritious to eat: *“There is really nothing at home, when they are from school we only give them sadza/pap with wild vegetables that have been dried so that they fill their stomachs.”*

The children, at home, tend to eat small quantities of food that lack the basic or major nutrients. The results show that in the evening they normally eat *sadza* or *pap* (thick porridge made of ground maize or millet) with cabbage or green vegetables. Those who eat two meals a day, their first meal is in the morning and it is something light such as porridge, plain tea without bread or left-overs from the previous supper meal. Morning meals are seasonal because this is an agricultural community, thus from February to July when they have some crops from their fields and gardens such as pumpkins, they then cook to provide a meal. The majority of children lack balanced diets in rightful quantities so that they could build immunity to diseases. Most of the participant teachers (7 teachers) indicated that on average, three quarters of the children in the school are food insecure.

The results below are even more poignant, as they show that some children go for more than a day without eating anything solid. Mr. Silundika (teacher) noted that:

“Food insecure children spend the whole week eating citrullus lanatus (‘amajodo’). This greatly affects them because they will be very weak and it leads to absenteeism” said Miss Gumede.

Stomach aches and Early Exit from Class

Mr. Xaba also said: *“Two of my learners once suffered from stomach-aches after eating unripe dovyalis caffra (‘umqokolo’) during break time because of hunger.”*

Citrullus lanatus (‘amajodo’) is vine-like flowering plant, cultivated for its fruit. It is subdivided into two varieties, watermelons and citron melons. They provide very light meals, in normal circumstances they are eaten as a dessert. *Citrullus lanatus* does not give learners enough energy that can last them for a few hours. Hunger also forces learners to abandon classes and scrounge for wild foods such as donkey-berry or *Grewiaavellana* (“ubhunzu”); buffalo-thorn or *Ziziphusmucronata* (“umphafa”); snot apple or *Azanzagarckeana* (“uxakuxaku”) and apricot sourberry or *Dovyalis caffra* (“umqokolo”).

Falling Asleep in class and Missing out on Lessons

The learning capacity of children is greatly compromised by food insecurity as is highlighted below. Some learners fall asleep in class due to hunger. They lose concentration, become absent minded and then fall asleep. Children miss most of the concepts being taught as they will be

asleep and thus it affects their academic performance, which is below average. Mr. Mangena, a teacher noted:

“Some of these food insecure learners have a low self-esteem because of poverty and hunger. They lack concentration in class because of hunger and they always doze and fall asleep during lessons. This causes them to perform below average when they write tests and exercises.”

The above excerpt implies that food insecurity causes learners to lose concentration and miss lesson time when critical concepts are taught because they will be asleep. It can be deduced that hungry learners feel weak and sleep due to a lack of energy. They cannot concentrate when they are in this state and they also withdraw from classroom interactions.

It was also indicated by Mr. Jomane that some of the learners fail to finish their written work due to a lack of energy and a low concentration span. He noted: *“These learners cannot do their homework because of hunger. Moreover, here in class they cannot complete their written exercises because they will be dozing, sleeping or complaining of headaches. I try to motivate them but it’s difficult since they will be hungry.”*

Mr. Khumalo explained: *“Before the feeding scheme, the absenteeism rate was as high as 11% from the normal 5%. Food insecure children tend to perform dismally at the end of term tests due to high absenteeism rates.”*

Hunger causes children to lose concentration and fall asleep and this compromises their learning in class. Learners who are always absent score very low marks since they miss out on learning most of the concepts being taught in class. Hence, when there is an assessment they perform poorly. What is also significant is the drop in the rate of absenteeism after the introduction of the feeding scheme.

The above quotes indicate that food insecurity reduces children’s concentration span, affects their school attendance and their health is compromised. If a child is food insecure there are various factors that militate against his/her learning leading to low academic performance.

The results also indicated that most of the food insecure learners have poor listening skills and writing skills and they lack physical resources such as proper school uniforms and exercise books. Additionally, there are comments, from teachers, that some learners do not cut their hair

short and they do not bath frequently like other children and this then impacts them in the following ways: they lose self-esteem, become isolated and lose confidence. It is evident that food insecurity goes hand in glove with poverty.

There is a view expressed that poor learners who are food insecure will not have positive academic outcomes. Mr. Moyo stated: *“The academic life of these children is very bleak. They will not make it since they can’t afford resources such as pens and exercise books that aid learning. They just come and sit, doze and sleep. We cannot chase them away because we know that they are from poor families. They are just passengers in class.”*

The teachers’ perceptions are that poverty is negatively correlated to academic excellence. Poor children lack resources, such as exercise books and pens that facilitate the learning process. Without the basic tools the child will have reduced academic success. Additionally, being hungry leads to learners falling asleep and they thus miss out on crucial classroom learning.

The class registers revealed that the attendance for children in lower grades was above average, however, they did not have most of the exercise books and this appeared to compromise their learning. They had many blank spaces in the mark schedules indicating no marks were allocated to these learners.

Furthermore, the results from document analysis (marks schedules, attendance registers and exercise books) show that most of the food insecure children had a shortage of exercise books. They did not have books for varying subjects. At primary level learners have eleven subjects and most of these children only had five or six exercise books in total and there were no exercise books for some subjects. In one of the schools, the teacher, Mr. Mapholisa, indicated: *“My student, Sibanda Lwazi, will not make it academically because he has only two exercise books out of eleven subjects. He doesn’t write exercises for other subjects with missing exercise books as evidenced by blank spaces in the marks schedule.”*

Without exercise books the child would come to school but fail to actively participate in the learning process. Most of the exercise books that were available were in a poor state, as they were not covered and pages were falling apart, some were covered in old and torn newspapers, which is an indication of poverty.

Teachers indicated that as the day progresses, children become weaker and lose concentration, which culminates in them sleeping in class. Their participation in class is very low and they even fail to complete their homework. As previously stated, during break-time and lunch-time they look for wild fruits such as donkey-berry or *Grewiaavellana* (“ubhunzu”); buffalo-thorn or *Ziziphusmucronata* (“umphafa”); snot apple or *Azanzagarckeana* (“uxakuxaku”) and apricot sourberry or *Dovyalis caffra* (“umqokolo”) out of desperation and some fall asleep in class.

Mr. Sithole explained: *“Most of the learners look for wild fruits such as donkey-berry or Grewiaavellana (“ubhunzu”); buffalo-thorn or Ziziphusmucronata (“umphafa”); snot apple or Azanzagarckeana (“uxakuxaku”) and apricot sourberry or Dovyalis caffra (“umqokolo”) during break time and lunch time. The lazy ones just sleep in class.”*

Food insecure children search for wild foods when they are not having lessons, however, some remain in class as a result of lack of energy to run around scrounging for wild foods and they are referred to as lazy by the teacher, which is unfair view given that they are too weak due to a lack of food. There is high competition amongst the vulnerable as they move from one point to another searching for food and a lot of energy is required. One of the teachers, Mr Sibanda, also highlighted:

“At break time they are given porridge but some fail to provide plates and end-up failing to get food. The school is too big and it’s difficult to concentrate on individual learners. If they fail to get food they look for wild fruits.”

Poverty bars some children from bringing plates to school so that they can access food. They lack basic physical resources that enable them to have access to food. At one of the schools it was noted by one of the school administrators, Mr. Melusi, that:

“During break time they receive porridge from Asset, a Non-Governmental Organisation. The quantities are very small, however, everyone in the school gets something to eat. Lunch times are usually utilized by running around searching for wild fruits such as buffalo-thorn or Ziziphusmucronata (“umphafa”); snot apple or Azanzagarckeana (“uxakuxaku”).”

Some schools are providing food, however it's in insufficient amounts which do not address the issue of food security for all learners. For the learners to be food secure they should get adequate quantities of nutritious food. If the quantities are very small or have inadequate nutritional value, learners will continue experiencing food insecurity.

Absenteeism and its link to Academic performance

Food insecurity, aggravated by long walking distances, leads to absenteeism. The results revealed that if children go for three to four days without supplementary feeding at school, the number of absent learners increases.

Mrs Kunene explained this relationship: *"School attendance is nearly 100% because these learners get supplementary feeding. When this donor stops bringing food, the numbers of absentees increase. Supplementary feeding is a motivator for school attendance."*

The above excerpt shows that there is a positive correlation between supplementary feeding and attendance. Amongst households which are food insecure, it is rewarding for learners to go to school to receive a meal rather than sitting at home hungry.

Document analysis was done through the observation of children's exercise books, marks schedules and class registers. The results show that concepts learnt were in line with the aims and objectives of the syllabus. Children who were scoring high marks in various exercises and tests received motivating comments from their teachers, for example, "well done"; "fairly good"; "keep-it up"; and "excellent work". Some teachers also encouraged their learners to work harder by writing comments such as "finish your work"; "be neat" and "put more effort". There were no comments in the exercise books of learners who scored far below average. The teachers might have lost interest due to absenteeism and a lack of resources. However, the needs of the learners were not considered. Most of the food insecure children miss the teaching of keyconcepts due to absenteeism, late coming and sleeping in class. One of the teachers, Miss Mudau, highlighted:

"When I came to this school six years ago I tried to give remedial work to my learners who were always absent from school but I realized that I was no longer giving enough attention to my normal class. These food insecure children are always absent, when they come to school they sleep in class. It is very difficult to teach them because as you try to teach them they start dozing

and fall asleep. I now concentrate on my normal classes. Moreover, there is a lot of paperwork at this school, the load is too heavy.”

The excerpt above also shows that learners who are always absent are not given follow-up work as shown by a high number of blank spaces in the marks schedules. They were not given remedial work for missed exercises either. In addition, children performing below average were not given remedial lessons for them to attempt to understand some of the concepts and content being taught because the teacher viewed them as being a difficult group because they would fall off to sleep during lessons from a lack of food. It is significant that food insecure learners are not given remedial work for missed concepts and exercises for them to be at the same level with other learners. In this way, they are marginalised in the class. Most of these children could not read and write, as shown by the marks schedule, since they are always absent and by not being given remedial work to cater for missed lessons, their performance will not improve thereby exacerbating their situation, preventing them from trying to climb out of their poverty through an education.

The teacher's perception is that food insecure learners cannot be assisted without addressing the issue of food first. For the learners to concentrate and learn normally like others they should be food secure. Here it is evident that learning is dependent on food security.

School attendance amongst food insecure children is erratic as they can go for three to four days per week without reporting to school. The class registers revealed that learners such as Mercy Moyo, Delight Hadebe, Nomatter Mhlanga and Vuyisile Lusinga, normally go to school (Zenzele Primary School) when they are given food. One of the school administrators, as stated above indicated that before the introduction of the feeding programme, absenteeism was as high as 11 per cent from the normal 5 per cent.

Table 4.1: Learners' marks (Source: Document analysis - Marks schedule)

<i>Name</i>	<i>Mathematics (Total = 10)</i>	<i>English (Total = 10)</i>	<i>IsiNdebele (Total = 10)</i>	<i>General Paper (Total = 10)</i>
<i>Dlamini Mbuso</i>	3	2	5	3
<i>Dube Loveday</i>	-	-	4	3
<i>Majola Thulani</i>	4	4	-	5
<i>Mloyi Given</i>	-	-	5	3
<i>Moyo Mercy</i>	6	3	-	4
<i>Moyo Nevson</i>	3	1	4	4
<i>Mpofu Sifelani</i>	-	6	5	5
<i>Ngwenya Edwin</i>	4	5	7	4
<i>Nyathi Edwin</i>	5	-	-	-
<i>Sakala Juliet</i>	2	4	5	5

The mark schedule shows that children miss most of the exercises that evaluate their academic performance, for example, Nyathi Edwin only wrote one exercise in Mathematics and missed the other subjects.

The results also show that most of the food insecure learners, especially from higher grades, were always absent from school. The class registers indicated that, for example Monalisa in grade 6 normally attended two or three times a week. Her teacher, Mr Gwebu, said that: “*Monalisa who is one of the food insecure children loses out on learning due to absenteeism and failing to write daily exercises and monthly tests*”.

One of the teachers, Mr. Mpofu, also stated:

“These food insecure learners are really struggling as shown by the marks schedule. They score low marks because either they are always absent from school or they don’t have exercise books. When other learners are writing they will be seated or fast asleep. It’s difficult to assist them. Their parents don’t come for consultations even if you pass a message to come to school.”

The above quote shows that food insecurity is not the only limiting factor to learning. Parents of these children are not coming to school to discuss issues that affect their children’s learning. Therefore, if parents are not aware of the problems their children are experiencing at school they will not take prudent measures that address their family’s food insecurity.

Non-participation in extracurricular activities

It was also indicated that some of the learners are forced to become truant due to hunger as they stop along the way to look for wild fruits. Most of the learners who are food insecure are reserved in personality, they generally isolate themselves during break-time and lunch-time. They do not participate in extra-curricular activities such as sports or physical education. This is because they lack energy. Those who do participate in athletics, for example, end up fainting.

Mrs Gumpo explained: *“Food insecure children have a phobia of physical education. They can’t cope because of hunger. If you force them they end up fainting or crying. As teachers we are very tolerant for these learners when it comes to extra-curricular activities. If they can’t do what others are doing, we allow them to rest.”*

Mr. Mabhena had also explained: *“Food insecure children do not have an interest in extracurricular activities such as sports because they always complain of headaches and stomach-aches and in some instances they vomit water in the morning. They will be feeling dizzy in most cases.”*

The bodies of food insecure learners are thin and they feel very weak and this disadvantages the learners since they cannot fully participate in school activities. The potential ability of the learner

to exercise is compromised to a great extent by the lack of food. If the child is always fainting in front of others his/her self-esteem can also be lowered as they appear fragile to their peers.

Quantity and quality of meals for older school learners

Learners in higher grades normally loiter around feeding points scavenging for food as school feeding programmes only cater for lower grades, that is, from Early Childhood Development (ECD) to grade 2. School attendance is higher among lower grades because they are given food at school.

Miss Dingani commented: *“At this school during break time the whole school is given e’Pap instant porridge and children enjoy it. At lunch time only those who are in Early Childhood Development (ECDs) and infants are given porridge which was donated by the government. Some learners in higher grades tend to abscond afternoon lessons as they will be looking for wild fruits.”*

Mrs Pikinini also explained that: *“When children are given a break they rush into the forest to look for wild foods and some never come back.”*

One school in the district managed to get a donor who donated e’Pap porridge. From the above quotations one can conclude that food insecurity leads to desperate behaviour amongst the learners. Truancy is regarded as a barrier to academic performance and achieving excellence since critical contact hours for teaching and learning between the affected learners and the teachers are lost.

Some learners carry various types of packed food to eat at break-time and lunch-time. However, those from food insecure households beg from other learners. The results indicated that most of the food insecure learners do not take food to school since there is nothing to carry from home. They rely on begging from a few who can afford a meal. Some food insecure learners bring what they can afford or have scavenged enroute to school. Some bring wild fruits because that is what is accessible to them.

Mr. Nkomazana said: *“More than 80 per cent of the children don’t bring anything to school. The situation is very bad (in their homes) to such an extent that nothing can be taken to school.”*

Mr. Ndlovu explained what the children then resort to doing: *“They don’t bring anything to school, they beg from their peers. If there are wild fruits such as Azanzagarckeana (‘uxakuxaku’) and Mimusops obovata (‘umbumbulu’)- they bring it as lunch. Some bring boiled maize when there are sports.”*

Foods normally brought to school include boiled maize, groundnuts, sweet potatoes, wild fruits and in rare cases bread, rice, ‘jiggies’ corn snacks and biscuits. It was noted that it is now a challenge to get wild fruits due to climate change and competition from wild animals such as monkeys and baboons. Mr. Gangeni, a parent, highlighted that: *“In the past we used to harvest more than enough wild food, but now climate change has greatly reduced the quantities and quality of wild foods and we are experiencing a stiff competition from wild animals such as baboons and monkeys.”*

Another parent, Mrs Zuma, indicated that:

“They don’t take anything to school. The fact is that even our supper meals that we depend on are not a guarantee because we struggle to get them. So giving them food to take to school is luxury.”

The above quotations reveal that children harvest wild foods in an effort to curb their hunger, however, their successes in this regard are minimum due to climate change and competition from wild animals. Children walk long distances searching for food and they end up losing more energy and become weaker and weaker. The parents cannot afford to prepare packed food for their children because they struggle to have meals at home.

4.2.3 Experiences of the Time-scale effects of food insecurity on school children

The effects of food insecurity on learners vary with time per day. In the lower grades, the effects are visible before break-time or before their meals. As they arrive at school, some fall asleep.

The effects of food insecurity before first break

Amongst the higher grades (3-7), the effects are highly visible from break-time to dismissal time which is normally 4pm. Mr. Maduma stated: *“When the assembly time is too long some of the learners faint because of hunger and tiredness. They come to school on empty stomachs so*

before they are given food they will be looking pale. Senior learners who are not given food tend to roam around feeding areas hoping to get something to eat or they abscond afternoon classes and find something to eat in the forests.”

The results show that learners lose a lot of energy and become weak as they travel to school and this is the cause of fainting at assembly points. As a result of limited food in schools, only children in lower grades are given food. Children from higher grades find themselves scrounging for food at the feeding sites. The implication of this is that hunger cuts across all the ages of the children.

The effects of food insecurity during afternoons

Most of the extra-curricular activities are undertaken after lunch and most learners disengage themselves from these activities. There are always cases of illnesses (stomach-aches and headaches) and learners sleeping in class especially in the higher grades where there is no supplementary feeding. One of the teachers, Mr. Mabhikwa, stated: *“We have since suspended afternoon lessons for grade 7 classes because of food shortages. As a grade 7 teacher I realized that most of the concepts taught in the afternoon were not well grasped as some learners were asleep and others absconded afternoon lessons.”*

The above excerpt reveals that teacher-learner contact hours are reduced thereby compromising the quality of learning. Afternoon lessons failed to yield positive results because of a lack of concentration and absenteeism by children. In the afternoons, learners are released from class to hunt for food.

The effects of food insecurity on weekends

During a focus group discussion, one of the parents, Mrs Moyo, commented: *“We can go for two or three days without eating anything. As an old woman, I stay with my grand children and their parents are deceased. I get US\$15 per month from Social welfare as a grant.”*

The articulation of the participants shows that learners are weak because they do not have access to food or they take in light meals. Learners do not have the energy to fully engage academically. The participants indicated that during weekends the effects are severe since there will be nothing to eat at home, unlike at school where they are given food. Mrs Nduna, a parent, stated:

“During weekends hunger greatly affects our children because they spend the whole day at home with nothing to eat. Weekends are the worst days. At times we exempt them from household chores since they will be hungry.”

The effects of food insecurity are lessened at school because of what is termed ‘supplementary feeding’ and they can share whatever they brought to school but at home the effects are so severe since the reserves are dry. The quote also shows that labour force is reduced when children are exempted from household chores. By reducing the labour force, household output is also reduced since there will be less people to work in the fields and the problem of hunger becomes cyclical.

4.3 The Determinants of food insecurity in Matobo district

The researcher identified three major determinants of food insecurity which arise from the thematic analysis of the interview data with all participants (parents, teachers and school administrators); these are social, economic and environmental determinants.

4.3.1 Social determinants

Within the theme of social determinants, the link between HIV/AIDS and single parenthood, child-headed households and old age is discussed.

Female-headed households

Most of food insecure primary school children or learners have single parents and the major cause of this is HIV and AIDS. It is difficult for single parents, especially women, due to ill-health to fend for their children and provide all basic needs. They tend to rely on begging and also working in other people’s homes as maids or weeding in the fields. The remuneration that they get is very low, so much so that it cannot sustain their families. Mrs Xaba stated that:

“I spent almost five days drinking black tea with my children until my neighbours and the village-head gave me a 10kg bag of mealie-meal. I am a single mother who has two children and I struggle to provide for them. I usually don’t know where my next meal will come from. When

the situation intensifies I usually get assistance from my neighbours and they always come to my rescue, otherwise my kids would be dead by now.”

The above excerpt shows the extremity of poverty amongst female-headed households. The participant relies on handouts from her neighbours. Food insecurity is very high because the participant does not know when she will get her next meal.

Grandparent-headed families

Grandparents are looking after the children because one or both parents have died due to contracting HIV and AIDS and most of these families are food insecure. Grandparents are no longer economically active in various livelihood options. This leads to a shortage of labour in most of the households thereby leading to low economic productivity. HIV and AIDS has reduced human capital, which is one of the most important assets of sustainable livelihoods. Miss Dube commented that:

“I can go for two or three days without eating anything. As an old woman I stay with my grandchildren and their parents are deceased. I get US\$15 per month from Social Welfare as a grant. World Vision also gives us 50kg of maize. This does not last us a month because we share with neighbours since everyone is food insecure.”

It is apparent from the articulation that the grandmother believes in social safety nets. This is a strategy that is being implemented so that no one starves to death in the community, however, food resources are too limited to ensure household and community food security.

Child-headed families

Some of the food insecure learners come from child-headed families with no sustainable source of income. The major source of income in such families is the trading of wild fruits. Households then compete with wild animals such as baboons and monkeys to get wild fruits and the market for these fruits is limited in rural areas. Wild animals also devour the fields during the day and at night. Additionally, if a family manages to plant some crops, it is difficult for most households to guard the fields both during the day and at night due to their limited human resources, which are

then plundered by wild animals. This mostly affects households with single parents, elderly parents and child-headed families. Mr. Manyathela (parentified child) stated that:

“It is difficult to earn a living this side of the country. I grow crops for wild animals like baboons and monkeys. These animals also eat our poultry, fruit trees and even our seeds.”

The above quote means that agricultural productivity is reduced by the animals referred to as pests namely baboons and monkeys. They reduce the agricultural production in the area especially for subsistence farmers thereby contributing to food insecurity in Matobo.

Dependency Syndrome

The results reveal that food aid has resulted in a dependency syndrome. In four of the focus group discussions with teachers, it was revealed that most of the parents of food insecure learners are dependent on food aid. The results show that some parents are not involved in income generating projects as they expect World Vision to donate food to the community. Such parents, according to the teachers’ perspectives, tend to waste a lot of time roaming around the village instead of participating in developmental projects. Mr. Mthombeni explained: *“The problem with people in this area is that they have turned into beggars and receivers of food from Food Aid Programmes. Most of them are lazy and they do not want to stand on their own and support themselves. More so, others have actually stopped their traditional way of surviving such as farming.”*

Similarly, Mrs Mabaleka also stated: *“The community is very much aware that they are food insecure but they do nothing to change this bad situation. What they do is to ask for interventions in terms of food provision from donors. It is now known that this area is for beggars.”*

It is apparent from the articulation that the teachers believe that the problem is twofold: dependency on outside sources for food and the end of traditional livelihood strategies. The teachers’ perception is that this community is noted for being poor because they appear not to actively want to change their lives for the better because of their dependency on outside assistance.

4.3.2 Economic determinants

The theme of economic determinants has been sub-divided and discussed under the following sub-themes: unemployment, loss of livelihoods and shortage of farming resources.

Unemployment

Nearly all of the learners who are food insecure have unemployed parents and guardians. These households find it difficult to access food as they lack financial resources. Some of the parents are self-employed. They are involved in vending (selling fruits such as mangoes, guavas and wild fruits), wood carving, beekeeping, and thatch grass harvesting. They receive less capital from these livelihoods due to a shortage of markets in rural areas. The other challenge is that wild animals also compete with people for fruits as explained above.

Loss of livelihoods

The findings also indicate that many of the parents of learners are slowly losing their livelihoods as a result of climate change. The water-table is steadily dropping and the rivers quickly dry-up during the winter season making it difficult for irrigation activities. Some of the irrigation schemes are a distance from the households and this is a great challenge for the elderly and ill parents. Water for irrigation is also very expensive, that is US\$20 per month per household. Most of the fields are now lying idle as the majority of households cannot afford the cost of irrigation. Mrs Zikhali, a parent, explained: *“Recurrent droughts have led to the lowering of the water table and the drying up of surface and ground water sources. Irrigation farming is now a challenge due to water shortages and we have to walk long distances to irrigation schemes.”*

Mr. Magagula also explained: *“Water is very expensive because it’s now under Zimbabwe National Water Authority (ZINWA). We can’t do other activities such as gold panning because it is dangerous and it needs a lot of energy.”*

The above excerpts signify that climate change has greatly affected people’s livelihoods as it has led to water shortages. Farming cannot be practiced without water and if there is no food production it implies that people should buy it from other areas. Even if livelihoods

are diversified away from agriculture to another activity, it is water dependent (e.g. gold panning) and this has high cost implications because water is now under new government entity with high costs.

Thatch grass harvesting is no longer sustainable because of successive droughts, wild fires and population growth. During the FTLRP people were settled in areas that produce a lot of thatch grass and illegal gold panners are the major perpetrators wild fires.

Mrs Mkhwananzi explained this relationship: *“In the past we used to harvest thatch grass and mopane worms for sale so as to get cash and access food whenever there was low output in the fields. Nowadays we no longer have mopane worms and thatch grass and we are now competing for the few remaining natural resources. Climate change has greatly affected our livelihoods.”*

Mr Bhebhe (parent) also noted that: *“Households that manage to harvest from their fields and gardens tend to sell their produce on credit due to shortage of markets. Buyers take a lot of time to pay and do not even pay back. This is one of the challenges affecting these farmers.”*

It is evident from the articulations that several factors such as climate change and population growth have weakened people's livelihoods. Those who have products to sell are failing to realize profits because people are buying on credit due to high unemployment and a shortage of cash in Zimbabwe.

Parents in the focus group discussion highlighted that the quantities of wild fruits have largely plummeted as a result of climate change. They explained that they are now competing with wild animals for the few remaining wild fruits and these animals also eat the vegetables in their gardens because they are not getting enough in the forest. Additionally, remittances are also no longer a sustainable source of surviving. Most of the parents who have children and relatives in South Africa highlighted that they no longer get remittances as frequently as in the past due to the weakening of the Rand (South Africa's currency) against the United States dollar (mostly used in Zimbabwe) and high unemployment in Zimbabwe. Mrs Gangeni (parent) explained:

“Our children working in South Africa are struggling to make ends meet because of the weakening of the Rand against the US\$. They are finding it hard to put food on the table and there is high unemployment in Zimbabwe. We will die of hunger.”

Mr. Jubane also explained: *“Last season I failed to buy seeds because my children didn’t send money home. I heard them saying the Rand is now weak and I don’t really know what that means. I’m trying to survive by selling wild fruits and it is no longer profitable as in the past due to climate change and population growth.”*

The sentiments of the parents indicate that diversification strategies are shrinking due to climate change and global recession. Non-farm activities are no longer sustainable methods of curbing food insecurity. Additionally, reliance on remittances from South Africa, to buffer the effects of food security is not a viable option anymore.

A shortage of farming resources

Most of the learners come from households where agricultural production is very low. Shortage of inputs was identified as one of the causes of low productivity. Unemployment and a loss of livelihoods leads to a shortage of financial capital thereby causing poverty and this ultimately hinders households from accessing agricultural inputs and the end result is chronic food insecurity. Most households lack a means of production as a result of poverty.

Mr. Ncube said: *“I’m very poor, I don’t have draught animals such as cattle and donkeys, I don’t have farming resources and my piece of land is very small. I usually assist those who have draught animals but they come to plough my fields very late towards the end of the planting time, so I don’t benefit much. I normally practice organic farming but it is very labour intensive, it needs young people who have a lot of energy.”*

These utterances show that households that cannot afford adequate resources are vulnerable to food insecurity. It implies that planning is difficult if one does not have resources.

4.3.3 Environmental determinants

Within the theme of environmental determinants, the link between climate change and small land holdings is discussed.

Climate change

Most of the participants said climate change is the major cause of food insecurity in the area. Climate change has depleted pastures leading to a loss of livestock and there is a shortage of irrigation water. Successive droughts lead to low agricultural outputs thereby worsening food insecurity. Mr. Tshuma, a parent, noted:

“The situation has been worsened by the fact that the adaptation capacity has been weakened by both climate change and economic hardships in the country. Due to prolonged droughts, the area has lost one of the most valuable natural resources, that is, the mopane worms. People used to generate income from these worms so as to access other foodstuffs.”

Mr. Mdlongwa also explained: *“Nowadays it’s very tough. We are gradually losing our pastures and water points due to successive droughts. Temperatures are too high such that within some days water points become dry and our livestock have to walk long distances in search of water.”*

The above excerpts reveal that climate change has led to the depletion of natural assets such as mopane worms, pastures and water. Non-timber forest products such as mopane worms and fruits get depleted as a result of aridity. Livestock are greatly affected due to depleting pastures and shortage of water. People’s resilience have been weakened by a lack of diversification because of limited resources.

Small land holdings

Population growth has led to fragmentation of land resulting in small land holdings and the rugged terrain is another factor which limits the availability of arable land. Most households have small pieces of land and they cannot sustainably practice crop production. The mountains in the area are also a habitat for wild animals like baboons, monkeys, wild pigs and leopards, which are pests to crops and livestock. Households find it difficult to practice agriculture due to small pieces of land and wild animals that destroy their crops and kill their livestock.

Crops are eaten by quelea birds, baboons and monkeys during the day and wild pigs, porcupine and kudus at night. It is a challenge to guard against these animals (which are regarded as pests) due to a shortage of labour since they are supposed to guard 24 hours a day. The area is closer to the Matobo National Park where there are many animals. Mr. Siphilanzima (parent) noted that: *“It is very difficult to earn a living in this area. We grow crops for animals such as baboons and monkeys. They eat our chickens, fruits and seeds in our fields.”*

Mr. Dube also commented: *“Our area is full of rocks and this minimizes land for crop production, and the few crops that we grow are eaten by baboons. We cannot keep goats and poultry because they are eaten by baboons and leopards. These are some of the causes of hunger in our area.”*

The sentiments by the parents indicate that there are human-wildlife conflicts in Matobo district. People settled in an area with wild animals and this is compromising their livelihoods. Farming seems to be an impossible livelihood strategy for the residents due to wild animals and climate change.

Matobo district is in a semi-arid environment. Most of the farmers grow drought tolerant crops such as millet and sorghum, however, the greatest challenge are quelea birds that feed on these small grains. Households try by all means to guard their fields against animals and birds but this is a very demanding exercise for the elderly and ill parents. Some learners fail to go to school as they will be manning the fields and this compromises their learning. One of the teachers, Miss Mlozwi, noted:

“Birds are a menace in the fields and gardens. They feed on small grains and vegetables. Some children, especially those who stay with their grandparents, fail to come to school because they will be manning the fields. There are a lot of pests in this area which destroy crops both during the day and at night. Farming is a challenge for the aged and ill parents.”

A shortage of labour forces children to miss classes as they will be providing family labour to guard the crops against animals. The drought resilient crops such as small grains are also vulnerable to birds and this reduces agricultural output.

4.4 The Strategies to food security in Matobo

Various strategies have been implemented by the parents of food insecure children to curb food insecurity but success has not been achieved to any significant extent. The results from interviews and focus group discussions, indicated in Table 1, show that adaptive livelihood strategies and aid are diverse, there are on-the-farm and off-the-farm activities and donors. The successes of these strategies are very minimum because of varying challenges as shown in the next section.

Table 4.2: Aid and Adaptive livelihood strategies adopted in Matobo district: Source - interviews and focus group discussions with teachers and parents of food insecure learners

Strategy	Description
Livestock rearing	Keeping of cattle, goats and chickens. Cattle are used as draught power and a source of milk and manure. Goats and chickens are a source of meat and they can easily be sold at the local market for cash in order to access other food stuff. There is a poultry project running in the district supported by Ebenezer scheme (donor), however, this caters for the households with larger yards to build chicken runs.
Crop farming	Small grains such as sorghum and millet and are very common in the district. Maize is also grown especially under irrigation in most cases. Most of the households depend on rain-fed agriculture. Crop farming is normally for family consumption and when there is excess it is sold in Bulawayo, the nearest urban area. Maize is also sold as green

mealies at the local market to get money for other necessities such as school fees, clothes and groceries.

Off-farm employment	Art and crafts making, bee-keeping, brick molding, thatch grass harvesting, casual employment and gold panning. These off-farm activities are done full time by some households whilst others practice them on part-time basis. Some parents are involved in seasonal migration to Bulawayo and South Africa for employment. Art and crafts are sold to tourists visiting Matobo National Park or marketed to nearby town,(Bulawayo) or to neighbouring countries, especially Botswana. Some households exchange their labour for food, for example, after weeding they get maize for mealie meal.
Receiving remittances	Some households get remittances from relatives working outside Matobo district, that is Bulawayo and in neighbouring countries, South Africa and Botswana. The money is used to buy food, clothes and also farm inputs. There are transporters, locally referred to as “omalayitsha”, who deliver money and groceries from people working in South Africa to relatives in Zimbabwe (Matobo district). <i>Omalayitsha</i> (cross-border transport operators) also assist those who are involved in seasonal migration to South Africa with transport.
Gardening (Nutritional gardens)	Some households have gardens, especially those closer to major rivers and wetlands. They grow vegetables, tomatoes and maize especially after the rain season from May to November. It is an off-season activity. Vegetables and maize are consumed at the household and/or sold at the local market for cash. Households sell their produce in order to get money to access other basic necessities. Most of the households are assured of a harvest from their gardens since they practice farming with irrigation.
Wild fruit harvesting	Harvesting and selling wild fruits such as apricot sourberry or <i>Dovyalis caffra</i> (“ <i>umqokolo</i> ”), red milkwood or

Mimusopsobovata(“umbumbulu”) and chocolate berry or *Vitexpayos*(“umtshwankela”) and exotic fruits such as guavas and mangoes at the local market or they are taken to the nearby town for sale. Wild fruits are also for household consumption, especially in bad years when the harvest from the fields is low.

Donor aid Getting food and farm inputs from donors such as World Vision, Social Welfare, Orap and Concern. Participants noted that donors assist them especially when there is a food crisis in the district. Elderly people are given US\$15 per month and a 50kg bag of maize.

4.4.1 Temporary jobs startegy

The number of meals is determined by “piece-meal” jobs that parents do. “Piece-meal” jobs improve food accessibility as cash will be available to purchase food. A school administrator, Mr Manzini highlighted: *“Some parents try by all means to source money for purchasing food. They do ‘piece-meal’ jobs such as weeding or herding cattle in the fields of other villagers and they are given money or a bucket of maize.”*

A parent, Mr Sidojiwe, also added:

“It is tough in this country, especially this part of Zimbabwe. I work very hard to find something for my children. I do casual work such as chasing away wild animals from people’s fields and fetching water for them.”

These assertions show that some parents have tried to improve food accessibility by engaging in income generating activities so that they can access food for their children. However, these are temporary jobs that only give ephemeral solutions to the problem of food insecurity.

4.4.2 Supplementary feeding strategy in Matobo district

The study shows that the government donated maize only to all primary schools in the district. Schools were asked to prepare mealie meal and to buy sugar in order to provide porridge to the

learners by the government. The amount of maize that was donated by the government only caters for learners in ECD to grade 2. The government did not budget for other higher grades. Parents prepare the food and teachers supervise the preparation. Each child was asked to pay 75 cents (US currency) per month towards the buying of sugar and peanut butter for porridge since the government only donated maize. Most of the parents were struggling to pay 75 cents for sugar and schools were feeding children with plain porridge. Mr Mancitshana, a school administrator, stated:

“Some children complained that they become hungrier after eating plain porridge.”

Mrs Zikhali, a parent, also explained: *“We are forcing our children to go to school because we know they will get porridge. The problem is that they eat porridge without sugar because as poor parents we cannot buy sugar for one child when the rest of the family is starving.”*

One of the teachers, Mrs Mdlawuzo, explain that the limited provision of a meal does not solve the hunger experienced by the learners:

“I don’t think this plain porridge is of any value to our learners. They are just eating to fill-up their stomachs. In no time they will be complaining of hunger again. The government didn’t do justice to the issue of food insecurity in our region. Parents cannot afford the essential ingredients such as sugar and peanut butter. We will continue feeding them this plain porridge as directed by the government but we are not solving anything.”

The above assertions indicate that the government did not do the nutrient needs assessment exercise for learners. The participants, teachers and parents, believe that the supplementary feeding programme is not addressing the nutrient needs of the learners because the government just donated maize in poor communities who cannot afford other essential ingredients such as sugar and peanut butter.

The results also indicated that some schools within the district managed to get donors who provide food for supplementary feeding. One of the donors is Camfed which fed all the learners

in one of the schools. Learners were given porridge with peanut butter at break time and then sadza and beans at lunch time. However, this donor lacked resources (lack of sustainability of donation) and the donation only lasted for three months. Another donor provided e'Pap porridge to one of the schools in the district. All learners were given e'Pap porridge at break time and then given government donated porridge at lunch time. Mr Zingani, a school administrator, stated: *"The e'Pap porridge is a pre-cooked, pre-sweetened, balanced health food made of wholegrain maize and soya containing starch, protein and 29 of the most important vitamins and minerals as highlighted below."*

Vitamin A – Needed for healthy skin, to fight infection and important for sight.

Vitamin B1 – For energy production, brain function and digestion.

Vitamin B2 – Turns fats, sugar and protein into energy. Important for hair, nails and eyes. It is important for body growth and the production of red blood cells.

Vitamin B3 (Niacin) –Helps balance blood sugar and lowers cholesterol levels. Helps maintain healthy skin and nerves.

Vitamin B5 (Pantothenic Acid) –for the metabolism of food. It also plays a role in the production of hormones and cholesterol.

Vitamin B6 –Natural and anti-depressant. Helps to control allergic reactions.

Folic Acid – VitaminB7 –Folate is necessary for your body to make new red blood cells. Red blood cells are needed to carry oxygen to your organs.

Vitamin B9 (Biotin) –for the breakdown and absorption of proteins and carbohydrates, and in the production of hormones and cholesterol. For healthy skin, hair, eyes and liver. They also help the nervous system function properly.

Vitamin B12 –Helps the blood to carry oxygen. Breaks down toxins like tobacco smoke and alcohol.

Vitamin C –Helps the immune system to fight infection. Keeps joints, bones and skin firm and strong. Turns food in energy.

Vitamin D – Helps maintain strong and healthy bones by retaining calcium.

Vitamin E – Protects cells from damage. Helps the body to use oxygen and improves wound healing and fertility.

Vitamin K – Controls blood clotting.

Sodium – Needed for proper fluid balance, nerve transmission and muscle contraction.

Calcium – Promotes a healthy heart and is essential in forming strong bones and teeth.

Iron – Transports oxygen to and from the cells. Vital for energy production.

Chromium –works closely with insulin to regulate blood sugar (glucose) levels.

Copper – is needed for the breakdown and absorption of iron.

Iodine – helps regulate growth, development and metabolism.

Magnesium – is needed for making protein, muscle contraction, nerve transmission and immune system health.

Manganese – is part of many enzymes.

Molybdenum – is part of some enzymes

Phosphorous – is important for healthy bones and teeth.

Selenium – helps clean the blood, it is an anti-oxidant.

Zinc – is needed for wound healing, normal fetal development, production of sperm, normal growth and sexual maturation and most importantly for boosting immune system.

The above constituents of e'Pap porridge show that it provides a balanced diet to learners since it has all the important nutrients for children.

One of the teachers, Miss Mazithulela, commented:

“The e'Pap porridge has all the nutrients that are needed by the learners. It boosts the immune system and intelligence of the learners. If a child is injured or sick and that child eats e'Pap porridge she/he recovers very fast. It also gives energy especially for the children suffering from HIV and AIDS.”

It is apparent from the articulation that the teacher believes e'Pap porridge is the best food option as a supplementary meal for the learners as it gives them energy and aids in a speedy recovery to those who are injured.

Recommended supplementary feeding for the district

The current supplementary feeding programme was described as less effective in curbing food insecurity amongst learners since the government only donated maize for lower grades. Most of the participants (teachers and parents) recommended that supplementary feeding should be for the whole school since there are cases of children from higher grades who are collapsing due to hunger as there is no primary feeding in the home. One of the participants, Mr Maseko (teacher), stated:

“This requires incorporation of different stakeholders and parents as well. It must be planned in such a way that every child is fed.”

This implies that parents should be actively involved in the programme so that they can assist with other inputs and labour. The results show that parents should be equipped with knowledge on supplementary feeding, that is, best nutrients for children. The inclusion of the parents will enable them to form co-operatives and come-up with income generating projects such as gardens and poultry farming to sustain supplementary feeding programmes.

Participants also indicated that at school, children should be fed at least two meals daily in rightful quantities. It was highlighted that they should be given porridge at break time and sadza and beans and/or cabbage at lunch time. The advantage of feeding the whole school with two meals is that children will have enough energy to concentrate on lessons and to showcase their true abilities and maximize their intellectual potential.

Mr Lunga, a teacher, said: *“The school should provide balanced meals for these learners since some of them are HIV positive and they take in tablets so they need balanced diets. Some learners stay with grandparents who cannot afford a balanced diet so it is the duty of the school to rescue these children.”*

The excerpt above indicates that a balanced meal is of great benefit to learners who are HIV positive because it provides them with all the nutrients and energy.

The results show that most of the stakeholders (parents, administrators and teachers) recommended supplementary feeding for the whole school with balanced diets to curb food insecurity.

4.5 Challenges in implementing the strategies to food security

Food insecure learners come from households that are food insecure. The interview and focus group discussion results reveal that there are several challenges encountered by food insecure households as they try to curb food insecurity for all members of the family. The success of adaptive livelihood strategies depends on the capacity of a household. It was evident that most of the households in the Matobo district are less capable of fully implementing sustainable adaptive livelihood strategies. The success of these adaptive strategies mainly depends on the availability of capital, which is a scarce resource in the district. The households faced a diversity of challenges in implementing sustainable adaptive livelihood strategies.

Livestock rearing

Most of the parents do not own cattle as they lack capital to start a project. This livestock project is capital intensive and most households fail to own cattle. Participants who own cattle indicated that the number of animals increase slowly due to a shortage of grazing land as the area is mountainous. It was also stated that they lose many calves to predators such as leopards, jackals and hyenas from the mountains. Cattle numbers on average are 10 per household. Small livestock such as goats are also devoured by leopards, jackals and baboons. Mr Mlalazi highlighted that it is a challenge to raise a meaningful number of goats because of the problem of predation. Chickens are also eaten up by baboons and jackals and households were failing to earn a living from them. It was noted that most of the households do not have capital to construct chicken runs and to buy chicken feed. Chickens are left to scrounge for food in the bushes thereby exposing them to various predators. It was also noted that households with smaller yards failed to qualify to keep chickens under the Ebenezer project scheme. Only households with bigger yards and security fences qualified for the scheme. The mortality rate for chickens tended to be high in some households due to lack knowledge and skills about ensuring the survival of their livestock.

Crop farming

The results show that most households depend on rain fed agriculture and it is severely affected by poor rainfall distribution. Dry spells in the middle of the rainy season lead to crop wilting and eventually low agricultural output. Irrigation farming is very expensive for most households as they are expected to pay US\$20 per month. One of the school administrators, Mrs Nsingo:

“There is shortage of water for gardening. ZINWA water for irrigation purposes is too expensive since they are supposed to pay US\$20 per month. Most of the families can’t afford this exorbitant amount. Some of the nutritional gardens are lying idle due to water shortages.”

Some of the irrigation schemes are too far for the elderly people as they cannot walk long distances and this eventually leads to food insecurity. Households that sell their produce on credit face challenges in recovering their money as debtors take a long time to pay their accounts. It was also highlighted that it is expensive to produce for the market in Bulawayo due to high transport costs.

Off-farm employment

The art and crafts industry has plummeted due to a decrease in the number of tourists visiting the country and Matobo National Park. In addition, the industry is now flooded as many people have joined it due to unemployment and retrenchments in Bulawayo. There are few tourists to buy the products and the industry is now less sustainable. Mr Zondo, a parent, had this to say:

“There is shortage of market for our sculptures. There are no whites to buy our products. They no longer visit our area. We spend the whole day seated here hoping to get buyers but there are no people to buy our products. In the past this business was really paying but now we are getting nothing. It is better to sell maybe wild fruits than doing this business.”

The quote shows that the politics has greatly led to food insecurity in the country because tourists have been scared away and businesses that are hinged on tourists, like the arts and crafts

industry, are at a standstill. Local people do not have the buying power of these products due to high unemployment.

Climate change has also weakened livelihood strategies to a greater extent. One of the teachers, Mr. Pambana, stated:

“The situation has been worsened by the fact that the adaptation capacity has been weakened by both climate change and the economic meltdown in the country. Climate change makes it nearly impossible to engage in income generating projects in rural areas since most of the projects are water centred.”

Participants indicated that brick-molding is now less viable due to a shortage of water as many water bodies, both surface and ground water, are shrinking. The scale of brick-molding has greatly decreased.

Households participating in bee-keeping also stated that climate change has reduced fruit production and vegetation diversity, because of the reduction in the number of trees that attract bees. Thus most of the areas are now dry. This eventually leads to shortage of bees in the study area so pollination does not occur and fruits are at a minimum.

The results also show that a reduction in rainfall has reduced the quality and quantity of thatch grass. Another factor exacerbating the problem of poor thatch grass is veld fires that destroy vegetation, nearly every year making thatch grass harvesting less sustainable. They also walk long distances to harvest thatch grass at the National Park and this is a challenge especially to the elderly people. One of the participants, Mrs Mathe, narrated:

“In the past we used to cut tall thick grass and we were harvesting mopane worms, selling these products in order to have access to food. Nowadays mopane worms have disappeared including thatch grass. Our livelihoods have dwindled due to climate change.”

It was also indicated that some economically active people in the district lack proper documentation such as birth-certificates, national identity cards and passports, so they cannot participate in seasonal migration to neighbouring countries. Illegal emigrants cannot be employed and are normally arrested and deported back to Zimbabwe.

Receiving remittances

Participants also indicated that the devaluation of the South African rand against the US dollar severely affected their livelihood options. Zimbabwe is in a multi-currency system and the major currency is the US dollar. Goods are priced in the US dollar. Most of the households are no longer benefiting from the South African rand due to devaluation. During the time of ESAP, thus between 1990 and 1995, textile employment fell from 25 320 to 12 427 (Carmody, 1998; Magure, 2015). Retrenchments in Bulawayo and other cities due to economic recession reduced remittances reaching the study area. Unemployment in South Africa and Botswana has also reduced the total amount of remittances received. Results show that remittances are no longer a sustainable livelihood strategy in the district especially due to the devaluation of the South African currency.

Farming

Results reveal that weather conditions have a great effect on gardening. Crops in valley areas are highly affected by frost especially during the winter season when low temperatures are experienced. Water sources are shrinking, surface water bodies are drying and the water table is falling due to successive droughts, they cannot fully support gardening throughout the year. Fuel for pumping water from the dams to gardens is very costly for most households. Some of the participants indicated that they abandoned their gardens due to expensive fuel and pesticides and water shortage. Mr. Mangena, a teacher in one of the schools noted:

“Farming is no longer a sustainable livelihood option in this area because of climate change which has led to water shortage. Parents are finding it hard to be productive in their farms and they are failing to eradicate food insecurity. Those that manage to get something from their gardens produce similar products and they flood the market leading to low prices. Their children

continue to be food insecure due to imbalanced diet since they always eat vegetables and no proteins.”

Wild fruit harvesting

Climate change has led to devastating effects on most livelihood strategies. The study shows that the amount of wild fruits has decreased due to high frequencies of droughts in the area. Less fruits are produced and there is high competition between people and wild animals. People from other districts also come to the area to harvest wild fruits leading to high competition and conflicts. Participants also indicated that the quality of wild fruits has deteriorated due to water shortage caused by droughts. Most of the fruits are no longer marketable since they are of low quality and this has greatly affected their livelihood. Mrs Mlalazi explained:

“The situation has been worsened by the fact that the adaptation capacity has been weakened by both climate change and economic downturn in the country. Due to prolonged droughts, the area lost most of the valuable natural resources such as wild fruits and mopane worms, locally known as “amacimbi.”

Donor aid

Participants stated that conflicts arise amongst villagers when they are selecting Social Welfare beneficiaries. Most villagers believe that beneficiaries of Social Welfare should be those who are unemployed and whose children are also not employed. Mr. Julugwe, a parent, noted:

“I don’t like the way Donors carry out their businesses in this community. These food supported interventions have created a rift amongst us on who should get food and who shouldn’t. People fight over food since everyone wants to benefit even those who are formerly employed or whose children are employed. Female-headed households and child-headed households tend to be victims in such scenarios and they continue to be food insecure.”

It was also indicated that food insecure learners are unhealthy as they are always weak and dizzy. They always suffer from stomach aches, headaches, lose a lot of weight and they have a low self-esteem. It was also indicated that most of them come late to school and they usually vomit water

in the morning and this is apparent to teachers that such learners did not eat solid food in the morning. Participants highlighted that some food insecure learners' rate of growth does not tally with their age. Physically, they have small bodies and in most cases they are very violent to other learners. Mr. Vundla, a parent said: *"I don't know any form of balanced diet. With my family we eat anything that we can lay hands on, we don't choose. I cannot take care for the health of my children since they eat any type of food even if it's unbalanced"*.

The sentiments of this parent show that due to a desperate need to eat to address hunger, having a balanced diet for the children to address their nutrient needs is not a priority. Learners continue to suffer from food insecurity because the issue of a balanced diet is alien at home but this is understandable because access to any food to curb hunger is critical for families because they have little choice.

4.6 Conclusion

The aim of this chapter was firstly to present teachers' experiences of food insecurity amongst primary school children in Matobo. It was revealed that food insecurity has both psycho-social and temporal effects amongst learners. Secondly, the type of foods brought to school by children was probed through interviews with teachers and it was indicated that those who are food insecure, bring wild fruits in some instances because of a lack of access to a cooked meal from home. Thirdly, the determinants of food insecurity were explored and it was revealed that food insecure learners are from food insecure households where there is a loss of entitlements and the effects of climate change are extensive. Poverty is very high in the district and most households cannot afford three meals a day. Various adaptive livelihood strategies have been employed, however, there is limited success due to lack of capacity by the households to come up with resilient strategies. Lastly, supplementary feeding programmes were analysed and it was shown that these programmes only feed learners in the lower grades thus older children who are food insecure in the schools are overlooked. In addition, the nutrient needs are not catered for in most schools as they feed learners with plain porridge. This is because of a shortage of resources in the country and district. Donor agency food is also unfairly distributed in the community due to community fighting which results in child and women headed households receiving the least/no donor aid. Most participants recommended a nutrient rich supplementary feeding programme

that caters for the whole school and the involvement of various stakeholders so as to gather enough resources.

The next chapter, Chapter Five, provides an in-depth discussion of the findings, by referring to the relevant literature.

CHAPTER FIVE:

DISCUSSION OF FINDINGS

5.1 Introduction

Chapter Five aims to take the findings and then link them to the available literature. Firstly, the chapter links the findings on teachers' experiences of food insecurity with the literature. Next, the reasons or determinants of food insecurity amongst primary school children are discussed. A discussion of solutions to food insecurity amongst primary school children concludes the chapter.

5.2 Teachers' experiences of food insecurity in Matobo district

Teachers have had diverse experiences with food insecure children. The experiences are divided into the following categories for ease of discussion: social, physical and time-scale effects.

5.2.1 Psychosocial effects of food insecurity amongst primary school children

Food insecurity acts as a psychological and emotional stressor on children, that is, it has psychosocial effects on children. The results show that food insecurity causes children to engage in unorthodox ways of accessing food due to their desperation to access any food. When food was being distributed, the children scrambled for food resulting in fist fights. The results are aligned with Snelling et al's (2014) results where they found out that food insecure children are more likely to have behavioural and psychosocial issues. It is further argued that children from food insecure households are likely to have behavioural disorders and hyper activity which makes them incompatible with school norms and this negatively impacts on their educational attainment (Payab et al., 2014). The definition of food security states that food is secured when all people have socially acceptable access to sufficient, safe and nutritious food to meet their dietary needs for a productive and healthy life (Nooghabi et al., 2017). When children are scrambling for food it is a sign of hunger and a shortage of food in the distribution. Schools are distributing insufficient quantities of food that also does not meet the dietary needs of the learners. This shortage of food causes children to fight for small quantities that are served to them.

The study also revealed that food insecure learners absconded afternoon lessons as they were scrounging for wild foods due to their hunger pangs. Learners from socio-economically disadvantaged backgrounds forage in their immediate environment to overcome food insecurity whilst attending school. This behaviour problem of truancy is an indicator of food insecurity. Hunger forces children to be truant at school since in most schools it is only those in lower grades who are given food.

In the present study, some of the food insecure learners were stealing the meals of their peers as a result of hunger. Hunger is defined as “the pain or discomfort resulting from a prolonged lack of food” (Spies et al., 2014, p. 5). A study by Payab et al. (2014) also revealed that children from food insecure households are likely to have behavioural disorders and hyper activity which make them incompatible with school norms and this negatively impacts on their educational attainment. The findings of Spies et al. (2014) also reinforces this assertion by stating that children who live in poverty are more likely to be retained, suspended and expelled and will dropout. These behavioural concerns are a result of hunger. In this study, teachers revealed that the food insecure learners drop out of school and normally fail grades more often than food secure learners. Food insecurity leads to worry, anxiety or sadness about the families’ food supply and shame or fear of being labeled as poor (Belachew et al., 2011; Huang et al., 2017). In this study, the children ended up having emotional stress and they engaged in antisocial activities such as theft. Figure 5.1 below shows that the social activities (experienced by children) are divided into behavioural and psychological disorders. Behavioural disorders are further divided into truancy and theft. The study shows that hunger causes children to be involved in truancy and theft. On the other hand, examples of psychological disorders are anxiety/worry, sadness, depression and low motivation.

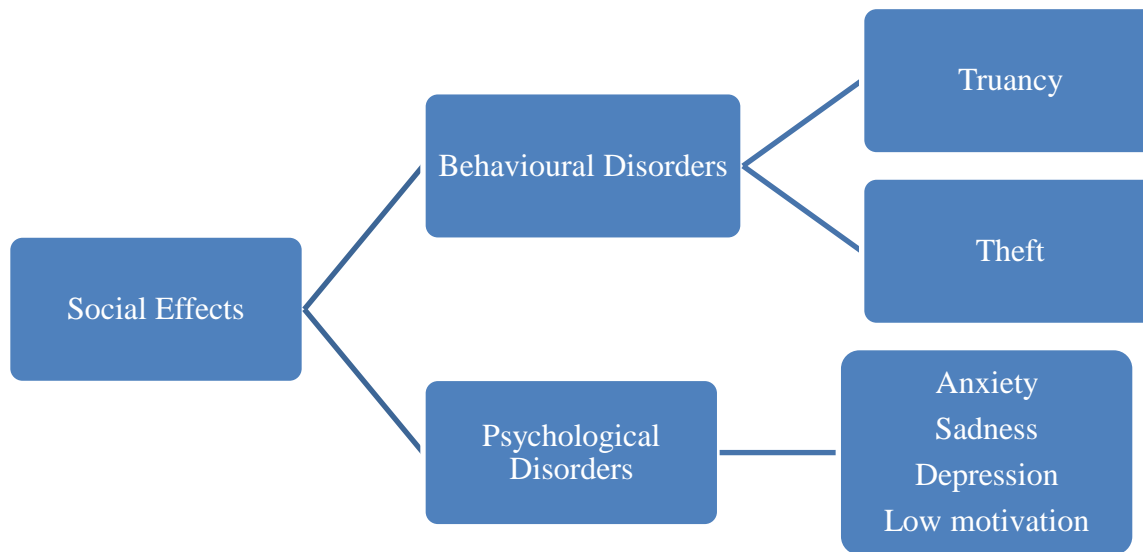


Figure 5.1 The social effects of food insecurity on school children

5.2.2 Physical effects of food insecurity amongst primary school children

One of the physical effects of food insecurity, according to the findings, was of children fainting at assembly points in the morning. Fainting was an indicator of hunger, a lack of energy and poor health due to food insecurity. This is also a by contention Ngunjiri et al. (2014) who highlighted that under nutrition affects physical activity which may in turn influence children's interaction with the environment. Food insecure children because of under nutrition compounded by walking long distances to school were very weak and they could not withstand long assemblies.

The participants in the present study, indicated that children were fed unbalanced diets, that is, *sadza* and dried wild vegetables in most cases. Malnutrition, in terms of under nutrition, leads to poorer health, slower development and lower educational performance amongst children (Purdam et al., 2015). Unbalanced diets cause children to be weak and they fail to be attentive at assemblies and in the classroom. Poverty is the root cause of poor nutrition because parents cannot access any food in addition to nutritious foods.

The present study revealed that absenteeism was very high amongst food insecure learners because of their bouts of illnesses such as headaches and stomachaches. This concurs with

Tamiru et al. (2016) who found that children from food insecure households are more likely to suffer from common illnesses like stomachaches, headaches and colds. Spies et al. (2014) also found that food insecure learners complain of physical ailments that result from a lack of food or insufficient amounts of nutritious food, often including headaches and stomachaches. Poor parents cannot afford balanced diets for their children and this causes children to be affected by various illnesses leading to school absenteeism. Purdam et al. (2015) also highlighted that malnutrition leads to poor health outcomes, there are delays in recovery from illness as well as longer periods in hospital and this is associated with slower development and lower educational performance. Further research by Tamiru et al. (2017) revealed that chronic school absenteeism has a significant contribution to poor educational outcomes and school dropout. Learners who are in pain due to hunger, headaches and stomachaches fail to concentrate in the classroom and learning is greatly compromised. Ill-health diverts the attention of the learner from school to his/her health. There is a positive correlation between health and learning, good health reinforces learning. Conversely, when health is compromised, learning is also negatively affected.

The results of this study also indicated that food insecurity leads to low attention span in the classroom as the learners will be dozing and falling asleep. This is a result of hunger and depriving children of sufficient calories and vital nutrients, has a significant physical and psychological impact on the children's ability to learn in the classroom (Spies et al., 2014). Hunger leads to impaired academic performance due to anxiety and depression (Snelling et al., 2014). This assertion is further reinforced by Spies et al. (2014). They stated that hunger leads to fatigue, irritability, dizziness, frequent headaches and difficulty in concentrating and have a tremendous impact on child's ability to learn and perform in the classroom. Food insecure children fail to do homework and they also sleep in class because of lack of energy as noted by Ngure et al. (2014) that under nutrition affects physical growth, motor development and physical activity. The findings of the present study also illustrated the same effects of hunger on learners' behavior in class and their performance.

The study shows that learners from socio-economically disadvantaged backgrounds cannot afford school uniforms and exercise books. A lack of resources, due to poverty, was another cause of depression amongst food insecure learners and this led to low self-esteem. Parents of food insecure learners could not afford to buy nutritious foods and to purchase learning material,

such as exercise books, that facilitate the learning process due to a lack of entitlements. Tamiru et al. (2017) noted that children born in poor families receive little mental stimulation and they are far more likely than their richer peers to grow in body and mind. Without proper resources, the child becomes a passive learner, and this retards the learning process. The economic recession in the country aggravated poverty to an extent that some learners failed to bring their own plates to school and ended up failing to get food. Food insecurity affects households that cannot access adequate food due to poverty irrespective of food availability (Burgess and Shier, 2016).

One of the teachers, Mr Sithole, pointed out that during break-time and lunch-time children forage for wild fruits in the nearby forest. The results of this study are in agreement with the findings of Sango and Nhamo (2015) that the poor are more dependent on wild products, including wild food since they are unable to produce sufficient food from agriculture and to purchase vegetables at periodic markets. Foraging for wild food is an indicator of food insecurity (Erskine et al., 2015). Children tend to lose a lot of energy as they forage for food because of high mobility, due to competition, and when they go back to school they tend to be tired and they disengage from the learning process.

Mark schedules for food insecure learners had low marks in most cases. Low performance was a result of absenteeism and loss of concentration during lessons due to hunger and illhealth. Learners missed a lot of concepts. Neuman et al (2003) also carried out a study in Kenya and found out that children consuming little or no animal products, particularly meat, were the least attentive in the classroom, less active physically and performed least well on cognitive tests. In addition, learners from food insecure households tend to have poor mathematics scores, encounter grade repetition and impaired social skills development (Jyoti et al., 2005; Ngure et al., 2014). Low academic performance amongst food insecure learners is a result of absenteeism and ill-health due to a shortage of important micro-nutrients such as iron. Learners tend to miss some of the key concepts resulting in impaired academic performance.

5.2.3 Non-participation in extra-curricular activities

Participation in extra-curricular activities normally requires a lot of energy from the participants. The study revealed that food insecure learners did not participate in extra-curricular activities

such as sports or physical education and those who tried to participate ended up fainting. Teachers indicated that the learners always excused themselves when they were asked to do extra-curricular activities. It was indicated that some learners cried and complained of headaches and stomachaches. Food insecure learners lack vital nutrients that give them energy, for example, iron is vital for stamina (Butler, 2015). When children suffer from chronic undernutrition of both macro- and micronutrients they become weak and vulnerable to illnesses. Food insecure learners end up failing to fully participate in the school curriculum. Chitiyo (2014) and Gundersen (2015) observed that food insecurity affects the energy levels of children and thus leads to disengagement from school activities. Arteaga and Heflin (2014) also added that food insecurity has an indirect effect on physical and psychological health that contributes to distraction, absenteeism and low motivational abilities for learning. These children become passive learners and fail to showcase their abilities. Hunger and chronic illnesses act as distracters to the child, thereby hindering the learning process.

5.2.4 One meal a day is insufficient for secondary school learners

The amount of food consumed by an individual is proportional with one's age. This present study shows that children in higher grades were fed once only in some schools during break-time at mid-morning. The findings also indicated that in the afternoon children in the higher grades absconded lessons as they were looking for wild foods such as fruits, saps and gums, bulbs, tubers, cereals and grains, nuts and kernels (Shackleton, 2014). These wild foods contribute in many ways to improving food security by providing accessibility to affordable and at times nutritious foods (Donn et al., 2016). This is aligned to the findings of Tamiru et al. (2017) who observed that the frequency of absenteeism is significantly high among adolescents from food insecure households due to hunger and food searching instead of attending lessons. Learners searched for wild foods in the afternoons because one meal a day was insufficient for secondary school learners. They need a lot of energy as they are young and very active, therefore, they need more food.

5.2.5 Time-scale effects of food insecurity on learners

The findings of this study showed that some food insecure learners went to school with empty stomachs and they collapsed and fainted at assembly points in the morning. This led to high

absenteeism and learners dropped out as they failed to cope with walking long distances to school and to also participate in school activities. Tamiru and Belachew (2017) found out that children from food insecure households are unable to go to school because of an exposure to different diseases, a lack of access to health services and inadequate food provision at breakfast. In addition, learners who go to school without having a meal tend to be apathetic, withdrawn, passive and have decreased motivation and this greatly affects the children's achievement scores or psychosocial behaviours (Alaimo et al., 2001; Tamiru & Belachew, 2017). When learners miss breakfast they become physically weak and this disengages them from school.

Afternoon lessons in higher grades were suspended because learners became less attentive due to hunger and some absconded lessons searching for wild foods. A study conducted in Ghana has similar results. It showed that since school lunch was served before noon, children were probably hungry again by the time school closed at 14h00 hours (Abizari et al., 2014). This implies that in the afternoon food insecure learners were failing to participate in school activities or they were looking for wild foods.

The results of this present study also showed that during weekends, the effects of food insecurity were very severe because children were missing supplementary feeding which is provided during school days. Some learners were orphans who stayed with grandparents who are economically inactive and thus unable to practice sustainable agriculture and some learners had single parents who lacked entitlements. These learners tend to skip meals due to poverty. Poverty causes children to be food insecure over weekends because parents have nothing to offer their children unlike at school where they are given supplementary feeding. The dependency ratio was very high rendering households vulnerable to food insecurity. Gebrehiwot and van der Veen (2014) pointed out that some studies see household size as being negatively associated with food security since larger households need more resources to fulfill their food needs, whereas other studies see a positively association, as larger households have a larger labour force and subsistence farmers almost entirely rely on family labour for field activities. This study concurs with the first assertion that household size is negatively associated with food security. Most of the food insecure children were from poor families with no livelihood assets. The unavailability of assets is a barrier to food security regardless of family size. Family labour is vital in households with resources/assets for agricultural activities.

5.2.6 Types of food brought by children to school

Children carried varying types of food to school. The results of the study revealed that those from socio-economically disadvantaged backgrounds either brought wild foods which they gathered enroute to school or they brought nothing. Food brought to school by learners show the level of poverty and food insecurity. Households that cannot afford three meals a day also fail to give their children food to carry to school. They lack the capacity to access food and children rely on wild foods which is seasonal most of the time. Donn et al. (2016) asserted that people at risk of food insecurity, hunger or malnutrition generally have the highest degree of reliance on forest products for income and food. Wild foods are not a sustainable source of food because they are seasonal and found in some geographic areas and also there is a high competition from wild animals. Therefore, the role of wild foods in ensuring food security varies in space and time.

Figure 5.2 shows that the education of children depends on their health. Food insecure children suffering from, for example, headaches, stomach aches, low attention span and low self-esteem experienced high levels of absenteeism. Absenteeism is also associated with unwritten school exercises, low marks, grade repetition and impaired grade repetition. The end result are school dropouts who have low levels of education.

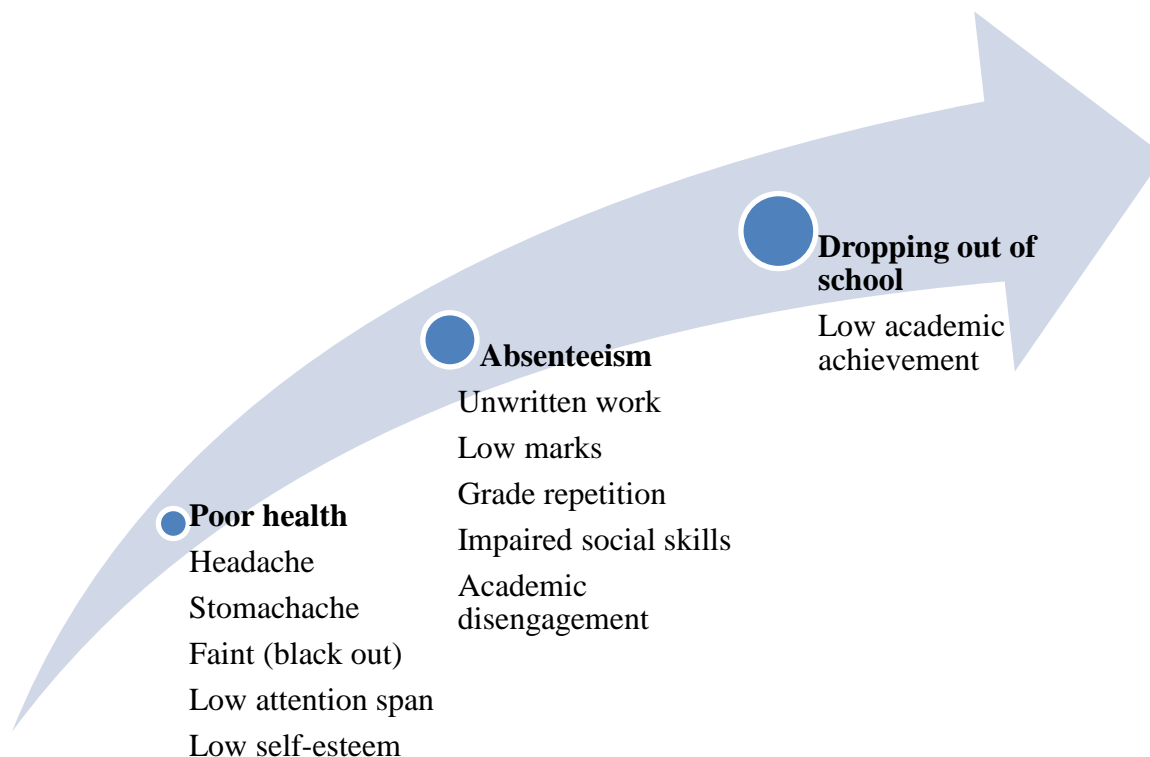


Figure 5.2 The physical effects of food insecurity on school children

5.3 Determinants of food security in Matobo district

The study revealed three major determinants of food insecurity in Matobo district, that is, social, economic and environmental determinants.

5.3.1 Social determinants

Female-headed households

The results showed that most of the food insecure learners had single parents and most of these households were headed by women. In addition, most household heads were of poor health. Studies (Harris et al., 2014; Donn et al., 2016; Ali & Vallianatos, 2017) have also shown that food insecurity is higher in households with children headed by a single parent and also female-headed households are more vulnerable. The paramount cause of a single parent structure in Zimbabwe is HIV/AIDS. McCoy et al. (2015) pointed out that food insecure and HIV infected women may be less likely to adhere to antiretroviral therapy (ART) and they may breast-feed

their infants for shorter periods of time, heightening the risk of onward transmission as they resort to mixed feeding. Teachers indicated that some of the food insecure learners were infected with HIV/AIDS and this compounded the problem of food insecurity. HIV/AIDS infected children were under medication and it was highlighted that if they failed to get food they became very weak, and this incapacitating them for learning. McCoy et al. (2015) also noted that food insecurity might result in an avoidance or delay of maternal health services because of its overlap with socio-economic position and the real or perceived costs of antenatal care (ANC), facility delivery and/or HIV prevention and care services. When women miss these health care services they become weak and more vulnerable to health complications thereby further exposing their households to severe food insecurity.

The study also revealed that some women who are single parents tend to be beggars, domestic workers or employed in weeding other people's fields. Kang'ethe and Munzar (2014) also had similar findings that women find themselves doing low paid jobs that affect their capacities to adequately take care of their families. They are involved in these low income activities because of low educational qualifications as is the norm in Zimbabwe. A study that was done in Iran by Shahraki et al. (2016) also found out that there is a significant association between the low education level of the mother and household food insecurity. In addition, Tamiru et al. (2017) found out that maternal education and their involvement in the heading of households have a positive contribution to their children's success and achievement in the school. People with low levels of education cannot get good paying jobs and they end up doing menial jobs and fail to access adequate amounts of food. Working mothers contribute to total household income and educated mothers are more likely to be aware of nutrition, hygiene and health care (Tamiru et al., 2016).

The cultural norms also disadvantage women because they limit women's power over productive resources such as land and thus limit their ability to buffer against negative impacts which affect children's health and well-being (Gi thinji & Crane, 2014). Rural women have limited access to productive livelihood assets such as land (Tamiru et al., 2016). Lack of access to assets renders women-headed households vulnerable to food insecurity due to low productivity. Therefore, the empowerment of women in agriculture enables rural households to have sustainable ways of

feeding themselves and also to get an income from selling the surplus produced, thereby becoming less vulnerable to both poverty and food insecurity (Sharaunga et al., 2015).

Grand-parent headed households

It was reported that some food insecure learners come from households that are headed by elderly people, that is, they stay with their grandparents. Some of the children lost their parents due to HIV/AIDS. Food insecurity in these households is a result of shortage of labour. Elderly people and children are economically inactive and thus vulnerable to food insecurity. Studies have produced contrasting results with regard to this assertion. The results of this study concur with that of Gebre (2012) cited by Mango et al. (2014) that households headed by elderly people are less productive and rely more on gifts and remittances. In Matobo district, one of the elderly participants indicated that she gets US\$15 per month from Social Welfare as a grant and she also gets 50kg of maize from World Vision. Non-Governmental Organisations (NGOs) assist elderly people to access food because of high poverty levels in rural areas. This shows that older residents are often more likely to be food insecure, that is, there is a significant positive association between food insecurity and age. On the contrary, some studies found out that as the age of the household head increases, the household acquires more farming experience, becomes more risk averse and diversifies its production (Bogale & Shimelis, 2009; Mitiku et al. cited by Mango et al., 2014). In line with this assertion is the view that as the household heads become more experienced with age and acquire more knowledge and physical assets it affects food security in a positive way (Gebrehiwot & van der Veen, 2014). Households headed by elderly people become food secure in countries or regions where farming resources are easily accessible. In Zimbabwe where there is a lack of resources and where there has been an economic recession for the past two decades, food insecurity increases with age as a result of a loss of entitlements.

The study also shows that the average distance of irrigation schemes from villages is 4km, therefore, irrigation schemes are not easily accessible by elderly people because of long distances. Climate change has led to the lowering of the water table and shrinking of surface water. These effects of climate change have resulted in shortage of water for irrigation purposes. There is a shortage of irrigation schemes because in sub-Saharan Africa irrigated farmland makes up just 5 percent of all cultivated land in the region compared to 14 percent in Latin

America and 37 percent in Asia (Hall et al., 2017). Matobo district is in a semi-arid region and most households depend on rain-fed agriculture which is very risky because of erratic rains. Irrigation acts as a mitigation measure against droughts and mid-season dry spells, which enables irrigators to grow crops throughout the year and it intensifies production at the same time (Moyo et al., 2017). In the same vein, Sharaunga et al. (2015) stated that access to irrigation reduces vulnerability to food insecurity by enabling rural households to produce more than one crop per year, increase their income, diversify their cropping systems and curb shocks due to weather and climate changes.

Households in Matobo district are not benefitting from the irrigation schemes because they are too far, especially for the elderly people and also Zimbabwe National Water Authority (ZINWA) water charges were too exorbitant for the rural poor people. Moyo et al. (2017) also echo the same sentiments that smallholder irrigation in Zimbabwe has numerous challenges, with more failures than successes. This is because of inadequate inputs, inaccessible markets, unreliable and inadequate water delivery due to weak governance institutions and government policies on land tenure that do not support a conducive environment for the successful operation of irrigation schemes. Irrigation schemes are a vital entity in curbing food insecurity in arid and semi-arid environments. However, in Zimbabwe in general, and Matobo in particular, they are “white elephants” due to weak government institutions that are failing to revamp them into productive zones.

Child-headed households

The results show that some food insecure learners came from child-headed families. These households were child-headed because parents are deceased as a result of HIV/AIDS, mostly. Munro (2015) pointed out that driven by the HIV/AIDS epidemic amongst the adult population, the numbers of orphans in Zimbabwe soared during the long crisis, peaking in 2008/09 at almost one quarter of Zimbabwean children. Food insecurity is very high in these households because of a lack of livelihood assets leading to high poverty levels. Burgess and Shier (2016) point out that food insecurity is related to poverty and it disproportionately affects vulnerable groups such as children, the elderly and female-headed households. Learners from child-headed families are greatly affected academically because orphanhood creates severe social and psychological

disorders since the inability to secure adequate food can lead to malnutrition, which in turn can negatively impact school performance and an ability to work (Munro, 2015; Burgess & Shier, 2016). Food insecurity affects orphans intellectually, socially and physically leading to low academic performance.

Dependency syndrome

Some teachers felt that parents of food insecure learners were failing to fend for themselves because of donations from NGOs. It is said that they had a dependency syndrome because they did not participate in income generating projects as they are always expecting food from donors such as World Vision. Some parents highlighted that they could not practice sustainable agriculture in the area because of factors such as: wild animals, climate change, small and rocky plots and poverty. The sentiments of the parents show that they are food insecure, not because of dependency syndrome but due to loss of entitlements leading to high poverty levels. They lack livelihood assets that can enable people to access food. Without any form of entitlement they are incapacitated to engage in income generating projects.

5.3.2 Economic and Environmental determinants

Unemployment

The results show that parents of the food insecure learners were not formally employed. Some parents were self-employed as vendors, wood carving, beekeeping and thatch grass harvesting. This concurs with the findings of Mlambo (2017) that by the middle of 2015, Zimbabwe had become a nation of vendors, with an estimated 90 percent of its population unemployed and struggling to eke out a living in the mushrooming informal economy. In addition, Kang'ethe and Munzar (2014) also found out that single mothers experience a higher risk of poverty because their incomes are not sufficient enough to bring forth their children if they are the only bread winners in the family. Parents that are self-employed tend to get low incomes because of high competition and shortage of market. The results are aligned with that of Sabar (2016) who studied vulnerable tribal groups in Karnataka and noted that for the traditional livelihood occupations (honey collection for the Jenu Kuruba and basketry for the Koraga) the income received was very small and insufficient to support their households given the rise in food prices.

When households sell similar products they flood the available market resulting in reduced prices of their products.

Households with unemployed parents experienced high food insecurity. Mlambo (2017) highlighted that by 2015 the country's (Zimbabwe) industrial sector had all but collapsed following years of economic problems that resulted in serious deindustrialization as factories closed and relocated to neighbouring countries and thousands of workers were thrown out of employment. Employment is an important entitlement that enables households to access food in most cases. However, during Zimbabwe's economic decline from 2000 onwards, many people lost their jobs due to company closures and retrenchments. There was entitlement failure, rendering most households vulnerable to food insecurity because they could not access food.

Loss of livelihoods

The study indicated that most households were food insecure as a result of loss of livelihoods such as employment and productive assets (land, livestock). Politically motivated violence since the year 2000 caused many people to lose their livelihoods, their homes and even their lives (Chitiyo, 2014). In addition, Legwegoh and Fraser (2015) stated that, food insecurity is the result of a failure of livelihoods to guarantee access to sufficient food to people at household level rather than a failure of agriculture to produce sufficient food at the national level. The participants in this study indicated that they lost their cattle during the 1992 drought and they failed to recover since the country was in economic crisis due to poor policies such as Economic Structural Adjustment Programme (ESAP) and Fast Track Land Reform Programme (FTLRP). Tamiru et al. (2016) also got similar findings in a study that was carried out in Kenya. It is noted that households that had livestock were less food insecure compared to those who had no livestock. This is because rural households accumulate their wealth in the form of livestock and access food by selling these livestock when there are food shortages (Motbainor et al., 2016). Gebrehiwot and van der Veen (2014) also found out that oxen form the main source of agricultural power and an increase in the number of oxen owned by one increases a household's food security by 8.7 percent. Livestock are kept mainly for cash income, draught services and manure. Households can get milk, milk products and meat from their livestock or sell them for cash (Mango et al., 2014). Therefore, households with livestock are less vulnerable to food

insecurity because they can sell their livestock and get income to access food and livestock also provide essential nutrients such as proteins and calcium. Climate change has led to the failure of livelihoods as most households have lost their livestock, water bodies are shrinking making irrigation impossible and wild foods dwindling.

From the present study, another livelihood source that was greatly affected by the global economic recession was remittances. Some of the food insecure households indicated that they were failing to get remittances from their children in the diaspora due to high unemployment in Zimbabwe and neighbouring countries. A shortage of remittances means that households cannot access food. A study that was carried out in Nigeria by Thow et al. (2016) had similar results as it indicated that remittance-receiving households were found to consume significantly more calories than non-remittance-receiving households and to have significantly higher iron content in their food supply. Remittances are used to purchase food and raw materials which are used in food production.

High unemployment in Zimbabwe and in the neighbouring countries has led to the recession of remittances as highlighted before. Households that were benefitting from these remittances are now experiencing difficulties in accessing farming resources. Remittances facilitate agricultural production, rather than substitute for it (Mango et al., 2015). Poor households tend to lack farming skills and knowledge due to low educational levels. This eventually leads to inappropriate choices culminating in low production levels and food insecurity.

Shortage of farming resources

Food insecure learners came from poverty stricken families that cannot afford to buy farming inputs for profitable agricultural production. The families did not have animals for draught services and most of them had small pieces of land. According to Burgess and Shier (2016) food insecurity is a situation where individuals have inadequate access to the resources that are necessary for a nutritious diet. Socio-economically disadvantaged households depend on their neighbours who assist them with draught power when time permits. Mango et al. (2014) pointed out that livestock contributes draught power and helps the household meet subsistence, income and nutritional requirements. Le et al. (2015) also highlighted that food access is determined by physical and financial resources, social support and the skills and knowledge to make appropriate

choices. These sentiments imply that the foremost cause of food insecurity is the lack of assets, which act as a buffer and can result in income generation during periods of crisis (Sabar, 2016).

The results also revealed that most households owned small land holdings, which did not allow sustainable crop production and animal rearing. A study that was conducted in Sekela district of Western Ethiopia by Mulu and Mengistie (2017) concurs with this present study. Both studies reported that the topography is hilly and not suitable for farming, the soil is prone for erosion and infertile, and the size of farm land is small. Gebrehiwot and van der Veen (2014) also noted that in subsistence agriculture, the land holding size is expected to play a significant role in influencing a farm household's food security. In the study area of the present study, there is a shortage of grazing land for animals because of high population growth and climate change. The remaining patches of land tend to be overgrazed. A study with similar results in Zimbabwe, was by Mabhena (2014) who found out that the majority of cattle owners in southern Zimbabwe indicated that they have been deprived of access to new grazing settlements by the FTLRP due to political reasons. This implies that the FTLRP has been selective in empowering Zimbabweans with land.

People in southern Zimbabwe have been sidelined, therefore, it is asserted that the FTLRP became synonymous with chaos and corruption (Murisa, 2016). The land reform programme in Matabeleland South region, where Matobo district is found, failed to address the main issue of grazing as envisaged by residents of the region (Mabhena, 2014). The major reason for any resettlement programme is to decongest people and empower them with the physical assets such as land. Mutopo (2014) asserted that land is a critical resource for rural Zimbabweans whose livelihoods depend on agricultural activities. A shortage of grazing land makes livestock vulnerable to droughts and households are forced to have low numbers that are not sustainable in ensuring food security. If numbers are low it is difficult for families to sell them during food shortages for fear of being more vulnerable to future droughts (Murungweni et al., 2014). This was clearly evident in Matobo where households clung to their few resources (livestock).

The effects of climate change and population growth

It was also indicated that climate change and high population growth have led to a shortage of mopane worms and thatch grass which are livelihood assets for the rural poor in Matobo.

Mopane worms are a delicacy for most households because they are a source of proteins. Successive droughts have reduced the population of mopane worms and the quality of thatch grass. High population growth has led to high competition for these natural resources thereby leading to overharvesting. Erskine et al. (2015) noted that the use of wild food species form a significant portion of the total food basket for households from agricultural, hunter-gatherer and forager system. In addition, there is high competition from wild animals for wild foods and this causes animals to devour people's fields and small livestock when there is no food in the forest. People living in most semi-arid regions of southern Africa have to deal with threats posed by wildlife and their associated conservation policies (Murungweni et al., 2014). Poverty and unemployment forces people to trade in wild fruits and climate change is gradually reducing the quantities of wild fruits, thereby forcing animals to invade people's fields and small animals for survival, further depleting the few resources that people have.

Most households have lost their entitlements such as arable land and livestock due to climate change. The effects of climate change on education are that it leads to reduced incomes as a result of loss of livelihoods thereby lowering school enrolment and attendance of learners because families might not be able to afford school fees or because children have to work to help provide for the family (Hanna & Olivia, 2016). The effects of climate change are more pronounced in developing countries as a result of high poverty levels leading to low adaptation capacities. It is advanced that the food security crisis in southern Africa is a result of climate change, high population growth and high poverty levels (Murungweni et al., 2014).

The effects of patriarchal society on food accessibility

Households headed by women tend to be severely affected by a lack of livelihood assets. The patriarchal society bars women from owning land resulting in food insecurity. Chiweshe et al. (2015, p. 724) stated that "the prevailing literature on land as a gendered space in Africa (and Zimbabwe specifically) identifies and explains the multifaceted ways in which patriarchy as a system of structures, practices and discourses – oppress and marginalizes women in terms of access to land and livelihood opportunities." Food insecurity in female-headed households tends to be rife due to lack of resources which is a social construction. Women with higher levels of physical capital (manmade goods that assist in the production process, e.g.

machinery)empowerment have the capacity to recover after risky events since they have the assets to engage in alternative economic activities (Sharaunga et al., 2015). Empowering women with physical assets is a strategy of curbing household vulnerability to food insecurity.

The results of the present study show that there are three major causes of food insecurity, albeit they are interrelated as is shown in figure 5.3. Loss of livelihoods, unemployment and a shortage of farming inputs are social, environmental and economic determinants. Single parents, old age and child-headed families are social and economic determinants of food security. Lastly, a small holding is both a social and environmental determinant.

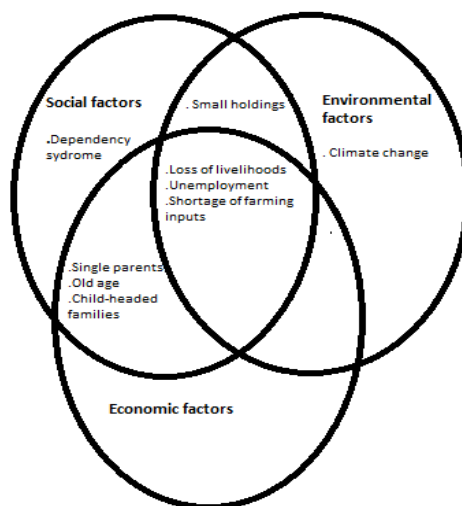


Figure 5.3 Determinants of food insecurity

5.4 Solutions to food insecurity

Food insecure households have embarked on on-farm and off-farm coping strategies to reduce food insecurity in the district. The levels of success vary from one strategy to another.

5.4.1 Temporary jobs

The study revealed that parents of food insecure learners were engaged in casual or piecework to earn money for purchasing food for their families. They did menial jobs such as weeding, cattle herding and working as house maids. In a study with similar results conducted by Ali and Vallianatos (2017) in Bangladesh it was found out that poorest households exchanged labour for food, that is, they sold their bodies in the form of physical labour and received their pay in

advance in order to purchase food. Similarly, Sabar (2016) found out that vulnerable tribal groups in Karnataka adopted income generation-based coping strategies such as working as agricultural-wage labourers or worked in non-farm related areas such as construction, artisan or collection of forest produce. The poor are normally uneducated and unskilled, so they tend to sell their labour in order to earn a living. In Zimbabwe, because of deindustrialization and underdevelopment of rural areas, most of the socio-economically disadvantaged households in Matobo district provided cheap labour in farms.

5.4.2 Supplementary feeding programmes in Matobo district

The government donated maize to all the schools in the district. However, the amount of maize donated only catered for lower grades, that is, ECDs to grade two and it was observed that school attendance improved in these lower grades due to supplementary feeding. Schools were supposed to prepare mealie meal and parents were asked to pay 75 cents (US\$) per month to buy sugar and peanut butter for porridge. Participants highlighted that some parents failed to pay 75 cents because of poverty and in some days children ate porridge without peanut butter. It was also noted that children would complain that they got hungrier after eating porridge without peanut butter. The results of this study concurs with that of Gelli (2015) and Gelli et al. (2016) that school feeding programmes can increase enrollment by 6 percent, improve school attendance and learning, as well as child's physical and psycho-social health. However, the feeding programme in the study area did not improve learners' physical health because they felt weaker after eating porridge in most cases. According to Singh et al. (2014), in India school feeding programmes act as safety net compensating for the previous health shock, at least for young children just entering school. This is in contrast with the findings of this study because children were just given plain porridge which does not contain essential nutrients since the government failed to supply enough resources for effective supplementary feeding.

The study shows that supplementary feeding in schools was not achieving its main objective of improving macro- and micro-nutrient intake by learners. Learners were given plain porridge, highly deficient in nutrients. Ickes et al. (2017) stated that these holistic programmes provide short to medium-term food supplementation, seeking to correct or prevent nutrient deficiencies, with the ultimate aim of preventing long-term under nutrition through improving dietary patterns. Porridge of maize without addition of essential ingredients such as peanut butter does

not serve its intended purpose. Hetherington et al. (2017) noted that programmes that rely on government-subsidized micro-nutrient supplementation or school-based food programmes are unlikely to be sustainable in the long term and may not reach the poorest households. This is the case in Zimbabwe, since the government only donated maize for lower grades and there were no other food stuffs with essential micro-and macro-nutrients that were donated.

The results also revealed that some schools managed to get donors who donated quality food such as e'Pap porridge with all the essential nutrients, as outlined in chapter two, and they fed the whole school. In such schools children were given two meals a day, that is, food from the donors and from the government. Participants noted that e'Pap porridge improved the immune system, cognitive development and energy of the learners and the HIV positive learners benefitted a great deal.

Hetherington et al. (2017) also noted that with adequate livestock nutrition, renewable animal source foods (ASF), such as eggs and milk, provide an opportunity for a steady supply of essential micro-and macro-nutrients for improvements to cognitive and physical development. In addition, Baum et al. (2017) found out that early stage primary school children attending a Malawian school feeding programme for one year had improved catch-up growth in lean muscle mass and improved cognitive outcomes compared to children attending a non-school feeding programme. This shows that when all stakeholders, i.e. the teachers, parents and the government, participate in school feeding programmes they also get assistance from donors who donate nutritious foods to learners. Snelling et al. (2017) asserted that school based programmes are a unique opportunity to reach households with children who face issues of food insecurity. When all stakeholders participate in the implementation of the school feeding programme it yields desired results.

5.5 Recommended Supplementary Feeding Programme for Matobo district

Participants indicated that school feeding programmes should be holistic in nature, i.e. all stakeholders should be actively involved. It was highlighted that parents should also be educated on nutritious foods for their children. The school could buy food from the community thereby boosting domestic or local production and contributing to food and nutrition security (Global Panel, 2015; Fernades et al., 2016). It was also further noted that (Global Panel, 2015) while

feeding children in school is not a new idea, recent policy innovations have expanded to focus on the delivery of healthy meals to children while at the same time stimulating agriculture through procurement of food from local producers. The community should not only be involved in food preparation as recommended by the participants but it should be tasked to improve agricultural productivity so that schools buy local and regionally produced foods.

The study also revealed that all children in a school should be given at least two balanced/nutritious meals per day. It was recommended that children should be given porridge at 1000 hours and *sadza* with beans and/or cabbage at lunch time (1300 hours). Baum et al. (2017) found out that children in rural Kenya supplemented with either daily meat-or milk-based snacks at school had improved diet quality (e.g. micronutrient intake) compared to children receiving no snacks or a portion of vegetable stew. Nutritious supplementary feeding two times a day enables children to be fully engaged in the learning process especially in the afternoon. In addition, HIV positive learners would also get enough energy to participate in school activities as other learners. In the literature it was also recommended that for a school feeding programme to be successful, deworming should be the first activity in any given school. Deworming can, in some contexts, contribute to the effectiveness of school feeding by removing one of the constraints to iron absorption in the form of parasites (Global Panel, 2015). This implies that the feeding programme should be preceded by other important activities such as deworming of children and identifying their nutritional needs. By so doing the school feeding programme becomes effective.

Figure 5.4 shows that the actual feeding programmes taking place in schools are less effective since they are not fulfilling the nutrient needs of the children. In addition, children are given small portions of food. Participants made a recommendation for the ideal feeding programme. It was recommended that for the feeding programme to be effective it has to start with the deworming programme followed by a nutrition needs analysis, involvement of all stakeholders and giving children at least two meals per day. This would result in good health and high academic performance by children as they will be food secure.

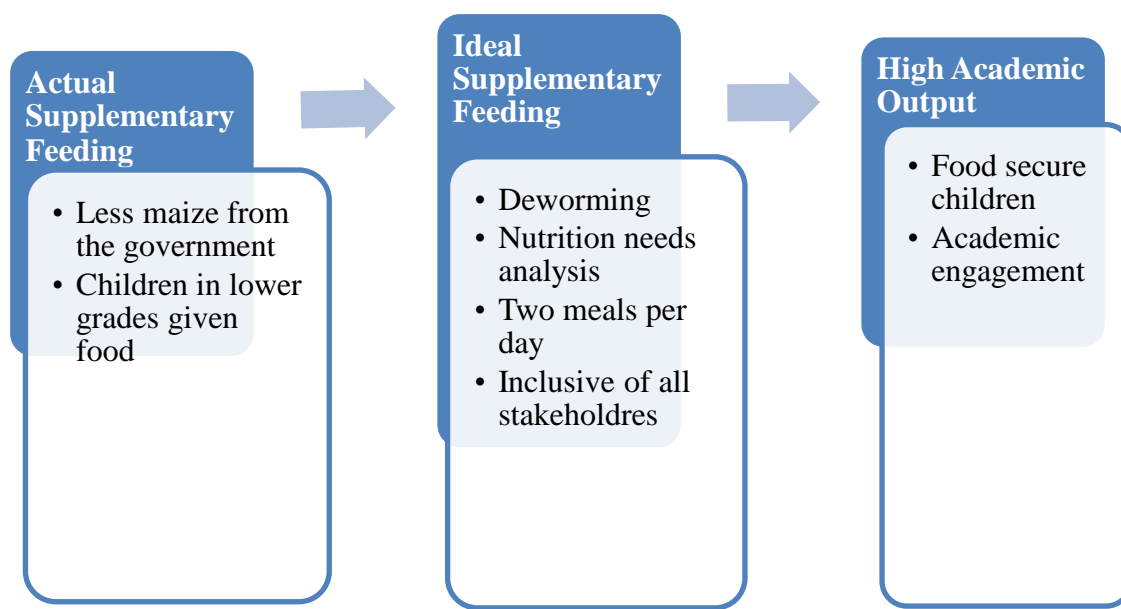


Figure 5.4 Actual versus Ideal school feeding programmes

5.6 Conclusion

This chapter described the teachers' experiences of food insecurity amongst primary school children in Matobo district. It revealed that there are social and physical effects of food insecurity that negatively affect the learning process. Food insecurity leads to delinquency, illnesses and non-participation in the school curriculum. Learners are food insecure as a result of social, economic and environmental determinants. Households headed by single-parents, women, children and elderly people experienced high food insecurity due discrimination, low educational levels, shortage of labour and lack of basic resources. Unemployment, loss of livelihoods and shortage of farming resources were economic determinants of food insecurity. Environmental determinants such as climate change led to the shrinking of water bodies, increased the frequencies of seasonal and intra-seasonal droughts leading to low agricultural output and loss of livestock.

The chapter also revealed that supplementary feeding programmes have been implemented to curb the effects of food insecurity. However, the strategy is effective to a lesser extent due to shortage of resources to provide nutritious diets to the learners and it is only those in lower grades that are given food. Schools are yet to implement supplementary feeding programmes that

address the nutrient needs of the learners, albeit some schools managed to source donors that are supplying schools with nutritious foods for all the learners.

CHAPTER SIX:

SIGNIFICANT THEORETICAL INSIGHTS

6.1 Introduction

The aim of this chapter is to present the insights of the study as they emerged from data generated and its interpretation in order to understand the vulnerability of primary school children in south western Zimbabwe to food insecurity. First of all the findings show that there are social and physical effects of food insecurity that affect the learning process of the learners. The learners from socio-economically disadvantaged background displayed antisocial behaviour (delinquency), experienced negative health effects (illnesses such as headaches and stomachaches), negative academic outcomes (absenteeism) and psychological stressors (lack of concentration) due to food insecurity. The chapter then goes on to explain the school supplementary feeding programmes and how it increases enrolment, improves attendance and retains learners. It transpired that most schools provide supplementary feeding programmes that are sponsored by the government, albeit, to junior classes only. It also emerged that some schools managed to source donors and they had effective supplementary feeding programmes. These schools fed all the learners with nutritious foods.

6.2 Theoretical insights on the Signs of food insecurity amongst primary school children in Matobo district

The insights emerging from the study reveal distinct signs of food insecurity: social, physical and cognitive. I begin with the discussion of social/behavioural signs. The behavior of children is modified by food insecurity and the children are affected psychologically and physically.

6.2.1 Psychosocial signs of food insecurity

Psychosocial signs are characteristics relating to the linkage of social factors and individual thought and behaviour. Food insecurity led to poor interpersonal skills that manifested as bad behavior amongst learners such as theft, fighting and truancy. In the study there was a positive association between food insecurity and delinquency amongst primary school children. Hunger caused children to breach the law by stealing and fighting for the little food available. They also absconded afternoon lessons to pick wild fruits to eat and they would return late to class or not return at all. Food insecurity at household level increases parental stress and depression thereby

compromising parenting abilities (Gee, 2018). It is further highlighted that economic insecurities such as low income places economic pressure on families, leading to heightened parenting stress and depression, which, in turn, increase harsh parenting and child maltreatment (Conrad-Hiebner & Byram, 2018). Maltreatment of children influences children's cognitive development and they suffer from behavioural problems.

6.2.2 Physical signs of food insecurity amongst primary school children

Physical signs reflect how children responded to food insecurity. Food insecurity resulted in school disengagement to satisfy the natural fulfillment of basic human need, namely food.

a. School disengagement

Food insecurity caused learners to be weak resulting in disengagement from school activities such as learning, school assemblies and extra-curricular activities (sports). Food insecurity also led to higher absenteeism as learners were prone common illnesses such as stomachaches, headaches and colds and this is a result of malnutrition. In addition, Agbozo et al. (2016) propounded those health problems due to suboptimal nutritional status in primary school-age children are among the causes of low school enrollment, high absenteeism, early dropout and unsatisfactory classroom performance. It is against this background that interventions such as school-based nutrition education, deworming, food fortification, supplementation and school feeding programmes should be introduced in schools (Kwabla et al., 2018). Learners should be given nutritious foods such as eggs and milk that provide an opportunity for a steady supply of essential micro-and macro-nutrients for improvements to cognitive and physical development (Hetherington et al., 2017).

Breakfast is a fundamental meal to be provided in schools so as to cater for those learners who come to school without eating anything in the morning. Research shows that breakfast consumption contributes to daily nutrient intake, helps adolescents meet dietary recommendations, is associated with more healthful food choices throughout the day and participation in physical activity, helps to maintain a healthy weight and positively influences psychosocial functioning, cognitive functioning, mood and academic performance (Demissie et al., 2018). Breakfast has multiple effects in aiding the learners to be fully engaged in the learning process. Therefore, its provision to the learners is of paramount importance.

b. Fulfillment of the basic human need for food

During breaks such as tea-break and lunch time learners foraged in their immediate environments to overcome food insecurity. Foraging for food is a coping mechanism adopted by learners to manage food insecurity. Food is a basic human need and when this need is missing almost all effort channeled towards the fulfillment of this basic human need. Maslow (1970) classifies all of human striving as an attempt to fill one of five needs, and the first need is labeled as physiological, such as air, water and sufficient calories and nutrients to live (Hagerty, 1999). When learners are food insecure their physiological needs are not being met, which according to Maslow is a basic need before higher needs can be met.

6.2.3 Cognitive signs of food insecurity amongst primary school children

Cognitive signs were evident in children's academic performance. Food insecure children were performing badly in their tests because they absconded classes, missed lessons and slept in class as a result of hunger and ill-health. Other studies have indicated that poor health and inadequate nutrition among school-age children is likely to diminish their cognitive development either through physiological changes or by reducing their ability to participate in learning experiences or both (Zenebe et al., 2018).

The above signs of food insecurity (found in this present study) are not independent of each other but they are inter-dependent, one sign feeds into the other, for example, a social sign was when children absconded classes which resulted in low academic performance and early dropouts. Social and physical signs resulted in low cognitive development.

6.3 Theoretical insights on the causes of food insecurity in Matobo community

Bohn (2016) referred to the four pillars of food security: food availability, accessibility, utilization and stability. In this present study the main phenomenon was food insecurity. I have determined that there were six contributors to food insecurity as follows:

a. Non- and limited availability of food

Anthropogenic activities such as conventional agriculture have led to numerous social and environmental problems including climate change, loss of biodiversity and ecosystem integrity,

land degradation and water security (Godfray et al. cited by Waldron et al., 2017). In the present study in Matobo district some human activities such as conventional agriculture and competition of food resources have led to the loss of entitlements in the form of biodiversity and arable land. Limited and non-availability of food in Matobo district resulted from climate change (droughts and shrinking water bodies), small land holdings, shortage of inputs (seeds), shortage of labour and long distances to sources of water. The loss of these entitlements (production based, trade-based, own-labour and inheritance), as shown in figure 6.1 below, results in food insecurity.

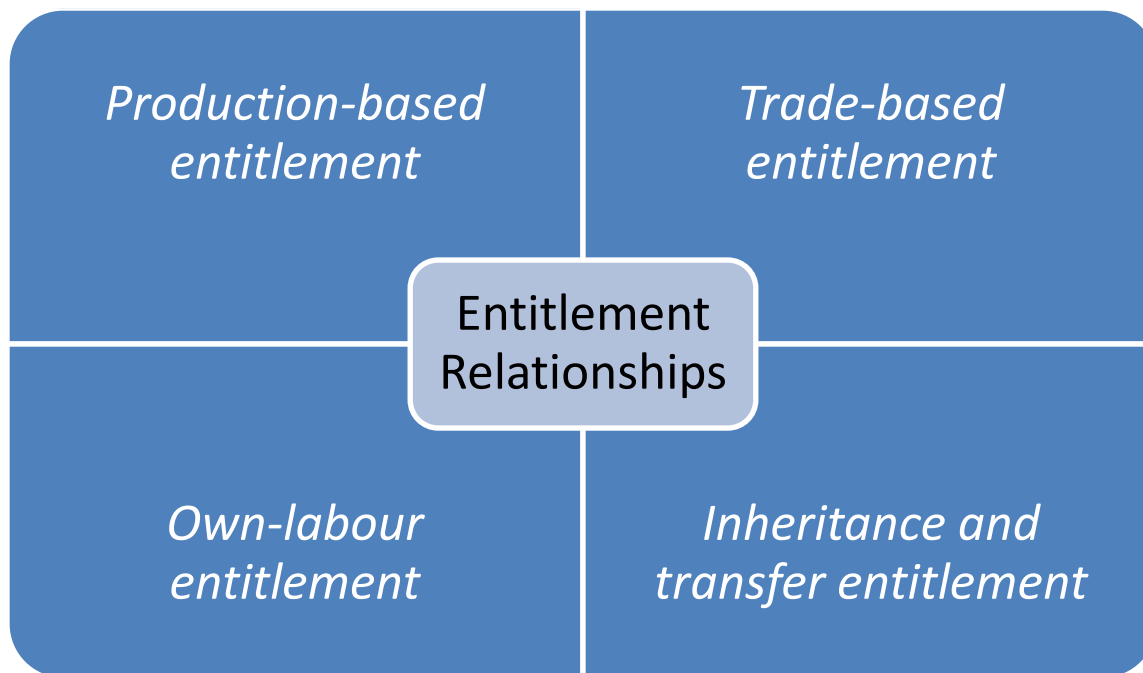


Figure 6.1 Four basic entitlement relationships

b. Non-accessibility

Due to the economic downturn in Zimbabwe, poverty has risen to unprecedented levels thereby weakening food accessibility. In the present study, learners from socio-economically disadvantaged backgrounds had unemployed parents. Some of the parents undertook casual jobs such as herding cattle or domestic work and they got meagre salaries. Some parents were self-employed and their incomes were very low due to high competition for inadequate markets and they ended up flooding their local markets with relatively similar products. Loss of livelihoods such as unemployment and reduced remittances has reduced the buying capacity of households resulting in poverty and non-accessibility to food.

c. Inadequate consumption of food

Eating inadequate food contributes to food insecurity. In this study, meals were only given to lower grades, that is, ECDs – grade 2 and it was only one meal per day. Upper grades (3-7) were not given food and they relied on wild foods which were short in supply.

d. Non-utilization of food

The consumption of unbalanced diet causes “hidden hunger”, that is, the deficiency of micronutrients in the body. In this study, the nutrient content was deficient as learners were given plain porridge. Parents could not afford sugar and peanut butter which they were asked to buy to add to the porridge.

e. Competition with wildlife for food resources

The proximity of the villages to the National Park has led to human-wildlife conflicts due to competition of the few resources available. The present study shows that households lost their farm produce to wildlife such as baboons and wild pigs due to their close proximity to the National park. There was high competition for wild foods between people and animals. Animals also invaded people’s fields due to a shortage of wild foods.

f. Female-headed household structure and poor health status

Female headed household structure with poor health status was an indicator of food insecurity in Matobo district. Most of the food insecure learners came from female headed-households and HIV/AIDS is the major cause of this anomaly. Taylor et al. (2017) highlighted that women heads of households are poorer than male heads because they have fewer assets and fewer economic opportunities and women farmers generally have less access to fertilizers and other inputs, farm gear and extension services. The shortage of these entitlements in women-headed households is a major cause of poverty. Sustainable Development Goal number five – “Achieve gender equality and empower all women and girls” has resonance for this finding. An early Asian Development Bank report in 2013 on Gender Equality and Food Security contended that expanding opportunities for women in employment and otherwise, is essential for women and girls to fully claim their right to food – and for society to benefit from women’s contributions (Taylor et al., 2017). It is asserted that the empowerment of women and girls through education, training and

equitable distribution of resources would ensure household food security. Mulugeta et al. (2018) observed that households whose head has at least attended primary school were less likely to be food insecure compared with those who cannot read and write. Therefore, education empowers people with the necessary knowledge and skills of earning a living and this works towards ensuring food security.

Figure 6.2 below shows that the contributors of food insecurity in Matobo community are cyclical in nature. In Matobo community most of the food insecure households are headed by women, husbands have either died due to HIV/AIDS or migrated to neighbouring countries such as South Africa and Botswana for employment. There is high competition with wildlife for food resources due to the close proximity to the National Park. These factors, female-headed household structures and poor health and competition with wildlife led to non- and limited availability of food and non-accessibility of food resulting in inadequate consumption and non-utilisation of food. In this study, the causes of food insecurity in Matobo district were multifaceted as shown in figure 6.2 below.

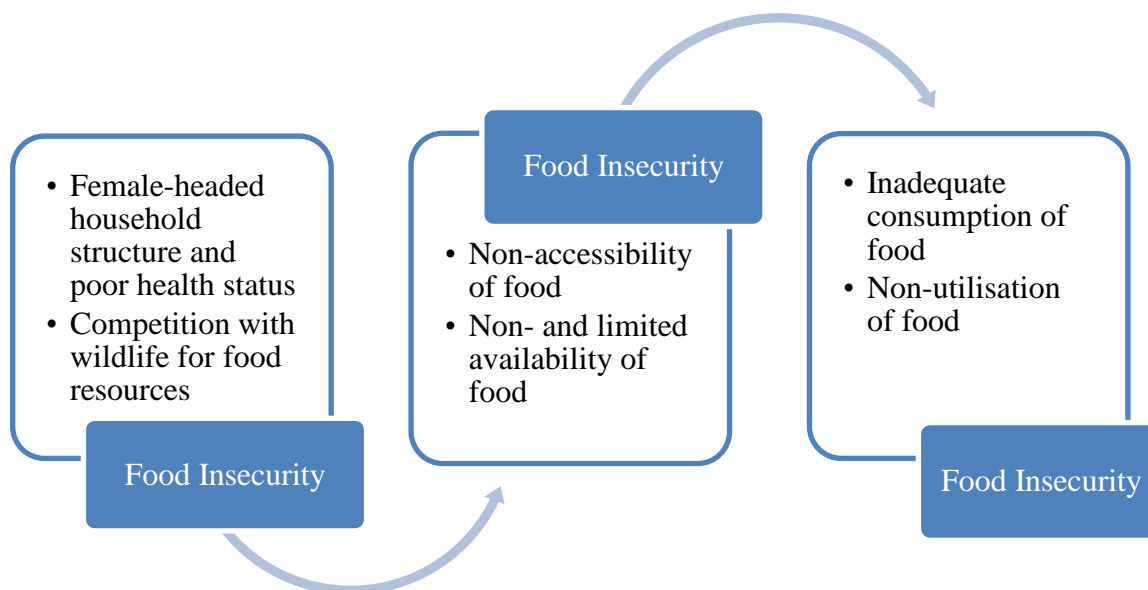


Figure 6.2 Causes of food insecurity in Matobo community

6.4 Theoretical insights on School Supplementary Feeding Programmes in Matobo district

Schools in Matobo district embarked on supplementary feeding with the assistance from the government and non-governmental organisations.

a. “Blind alley” supplementary programmes

The effectiveness of a feeding programme is based on learners’ nutrient needs assessment and the provision of nutrient-rich foods. In this study, the government only donated maize and the schools had the mandate to produce mealie meal and prepare porridge and/or *sadza* for the learners. Due to a shortage of resources, parents were asked to assist in the form of sugar for the porridge and vegetables for relish. Most parents struggled and failed to provide these food stuffs as a result of poverty. Learners were given porridge without sugar and other essential ingredients such as peanut butter. The supplementary food was nutrient deficient to a greater extent. Zenebe et al. (2018) pointed out that financial constraints frequently affect the timely and uninterrupted supply of grains and other inputs required for the programme. Vira et al. (2015) posit that micronutrient deficiencies are often referred to as “hidden hunger” as they can occur within the context of adequate energy intake, and can be overlooked using traditional measures of food security.

b. Nutrient needs assessment

The nutrient needs assessment of the learners can be done by schools and then add the lacking nutrients so as to have viable and sustainable supplementary feeding in schools. Kwabla et al. (2018, p. 7) suggested that “since resources are generally limited in the poorest countries and providing food can be expensive, targeting communities that lack the resources to adequately provide for their school-age children is a critical element in improving the impact and penetration of school feeding programmes.” The role of feeding programmes is to enable children to attend school, retain them at school and to supplement lacking food nutrients.

c. Sustainable feeding programmes

The school feeding programme should improve the dietary diversity of school children by adding different food groups into their diet (Zenebe et al., 2018). It is also highlighted that in resource

limited nations, majority of school-aged children often walk long distances to school without having a morning and midday meal due to poverty (Kwabla et al., 2018). This means that school feeding programmes should fulfill the nutrient requirements of the learners. Therefore, access to a nutritious breakfast and midday meal is a very important determinant of the nutritional status as well as the overall well-being and cognitive development of school children (Ayogu et al., 2018). An average of two nutritious meals a day is sustainable for learners who come from socio-economically disadvantaged backgrounds since they go to school without eating anything in the morning. In this study, supplementary food programmes are actually not supplementary but ‘primary’ because it is not addition to any other food being accessed by the learners. It is the only meals they will have access to in a school day.

6.5 Avenues for future research

From the findings of the present study, there are various areas that can be explored for future. Firstly, research can be undertaken on determining the nutrient needs of the learners by the schools or government so that an appropriate primary feeding programme can be implemented. Secondly, research can be carried out assessing the effectiveness of these so called ‘supplementary feeding programmes’ in enhancing high academic performance amongst the learners. The schools should roll out ‘supplementary feeding programmes’ across all ages to assess behaviour change especially amongst those who steal from other learners. According to Jomaa et al. (2011) and Spieset al. (2014) greater benefits of school feeding programmes are observed among younger school-aged children. However, some studies concluded that there is little evidence for nutritional benefits of school feeding and that school feeding only enhances learning when other improvements in school quality are made (Jomaa et al, 2011; Kristjansson et al., 2016). Some studies (Powell et al., 1998; Chitiyo, 2014) have shown that providing breakfast benefited children’s classroom behavior only if they were in well-equipped and well-organized schools, and that the behavior of children in poorly organized and overcrowded schools actually deteriorated. Research can also be carried out on exploring the nutrient value of wild foods to children in primary schools. Lastly, there is need for research on assessing whether improved school diets inspires an improved home diet. One of the studies shows that when children were given breakfast at school, their families subsequently bought more milk, meat, fish, and high vitamin C foods (Greenhalgh et al., 2007; Ghattas et al., 2017).

6.6 Conclusions and recommendations

This section deals with the conclusions and recommendations that can be made in the light of the findings and discussions of the study.

6.6.1 Conclusions

Food insecurity leads to undesirable outcomes in children's development such as compromised social skills (delinquency) and low academic performance. When food was being distributed children scrambled for food resulting in fist fights and this is an indicator of hunger and shortage of food that is being distributed in schools. Learners from socio-economically disadvantaged backgrounds also foraged in their immediate environment to overcome food insecurity whilst attending school.

The physical effects of food insecurity, according to the findings, are of children fainting at assembly points in the morning, stomachaches, headaches and colds. The participants indicated that children are fed unbalanced diets in most cases at their homes. Unbalanced diets cause children to be weak and fail to be attentive at assemblies and in the classroom. It was shown that absenteeism is very high amongst food insecure learners because of illnesses such as headaches and stomachaches. Poor parents cannot afford balanced diets for their children and this causes children to be affected by various illnesses leading to school absenteeism. Learners who are in pain due to hunger, headaches and stomachaches fail to concentrate in the classroom and learning is greatly compromised. The study revealed that learners from socio-economically disadvantaged backgrounds could not afford resources that aided learning such as school uniforms and exercise books and this led to depression and low self-esteem. Hence there are deep psychological effects for food insecure learners.

The study revealed that food insecure learners did not participate in extra-curricular activities such as sports or physical education and those who attempted to participate fainted in most cases. Teachers indicated that the learners always excused themselves when they were asked to do extra-curricular activities. It was reported that some learners cried and complained of headaches and stomachaches.

Learners went to school with empty stomachs and they collapsed and fainted at assembly points in the morning. This caused high absenteeism and high dropout rates as they failed to cope with

walking long distances to school and to participate in school activities on an empty stomach. During weekends, the effects of food insecurity were more pronounced because children were missing the so called ‘supplementary feeding’ which is provided during school days.

Most of the food insecure learners had single parents and most of these households were headed by women. Teachers indicated that some of the food insecure learners were infected with HIV/AIDS and this compounded the problem of food insecurity. HIV/AIDS infected children were under medication and it was highlighted that if they failed to get food they became very weak, incapacitating them for learning. It was reported that some food insecure learners came from child-headed households or households headed by elderly people (grandparents). Most of them lost their parents due to HIV/AIDS.

The study also revealed that some women who are single parents were employed in meagre jobs, i.e. they were beggars, domestic workers or employed in weeding other people’s fields. Some parents were self-employed as vendors, wood carving, beekeeping and thatch grass harvesting. People with low level of education cannot get a good paying job and they end up doing menial jobs and fail to access adequate amounts of food. The study indicated that most households are now food insecure as a result of loss of livelihoods such as remittances, livestock, wildlife, land and jobs due to economic recession and climate change.

The government donated maize to all the schools in the district. However, the amount of maize donated only catered for lower grades, that is, ECDs to grade two (grade three to grade seven were overlooked) and it was observed that school attendance improved in these lower grades due to supplementary feeding. The study shows that the so called ‘supplementary feeding’ in schools is not achieving its main objective of improving macro- and micro-nutrient intake by learners. The results also revealed that some schools managed to get donors who donated quality food such as e’Pap porridge with all the essential nutrients, as outlined in chapter two, and they fed the whole school. In such schools children were given two meals a day, that is, food from the donors and from the government. Participants noted that e’Pap porridge improved the immune system, cognitive development and energy of the learners.

Participants indicated that school feeding programmes should be holistic in nature, i.e. all stakeholders should be actively involved. It was highlighted that parents should also be educated

on nutritious foods for their children. Participants also proposed that all learners in a school should be given at least two balanced/nutritious meals per day.

6.6.2 Recommendations

On the basis of the findings the following recommendations can be made:

1. The government should empower women and women-headed households with resources such as land and farming inputs so as to achieve household food security.
2. The government should revamp irrigation schemes especially in semi-arid areas for sustainable agriculture and food security. Reliance on rain-fed agriculture is no longer feasible due to successive inter-and intra-seasonal droughts caused by climate change.
3. The nutrition status of children should be identified so that proper nutrients are recommended and this can vary from one district to another. Therefore, districts should develop school menus that cater for the learners' needs. Schools should implement programmes on nutrition education for learners and parents so that they accept food that would be fed in schools. It is a view that nutrition education for parents would also lead to behavioural change among parents so that they give their children nutritious foods.
4. All stakeholders, teachers, parents, non-governmental organisations and the government should participate in the ongoing implementation of the school feeding programme so that it yields the desired results.
5. The parents should be educated on nutritious foods for their children.
6. Food for supplementary feeding should be bought from the community thereby boosting domestic or local production and contributing to food and nutrition security.
7. All learners in a school not just those up to grade 2, should be given at least two balanced/nutritious meals per day, i.e. breakfast and lunch and also distribution should take place on week-ends and not just school days.
8. School supplementary feeding programmes should be evaluated at the end of each academic term to see whether desired objectives were achieved and these should be renamed because they are actually 'primary feeding programmes'.

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APPENDIX A: Ethical Clearance Letter



5 May 2016

Mr Nkululeko Joshua Ndiweni 214584158
School of Education
Edgewood Campus

Dear Mr Ndiweni

Protocol reference number: HSS/0330/016D

Project Title: Vulnerability to Food Insecurity in South Western Zimbabwe: A case of Primary School children in Matobo District

Full Approval – Expedited Application

In response to your application received 04 April 2016, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.

APPENDIX B: Clearance Letter from the Provincial Education Director

All communications should be addressed to "The
Provincial Education Director,
Ministry of Primary and Secondary Education "
Telephone: 0284/23009/11
Fax: 0284/23383



**Ministry of Primary and Secondary
Education**
P. Bag 5824
Gwanda
Zimbabwe

16 September 2015

NDIWENI NKULULEKO JOSHUA
UNIVERSITY OF KWAZULU NATAL

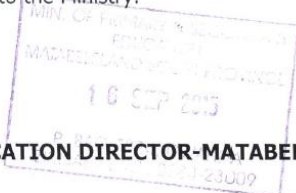
**RE : REQUEST FOR PERMISSION TO CONDUCT A RESEARCH IN PRIMARY
SCHOOLS IN MATOBO DISTRICT ON "VULNERABILITY TO FOOD INSECURITY
IN SOUTHERN ZIMBABWE: A CASE OF PRIMARY SCHOOL CHILDREN IN THE
FOLLOWING PRIMARY SCHOOLS HALALE, NJELELE, WHITEWATER,
MAHETSHE, SHASHANE, ST JOSEPH'S AND SILOZWE" IN MATABELELAND
SOUTH PROVINCE.**

The above matter refers:

You have been granted permission to carry out a research on " Vulnerability to food insecurity in Southern Zimbabwe: A case of primary school children in Matobo district in the following schools, Halale, Njelele, Whitewater, Mahetshe, Shashane, St Joseph's and Silozwe" in Matabeleland South Province.

At the end of your research you will be requested to submit a copy of your findings to the Ministry of Primary and Secondary Education (Matobo District Office) so that it can be useful and of benefit to the Ministry.

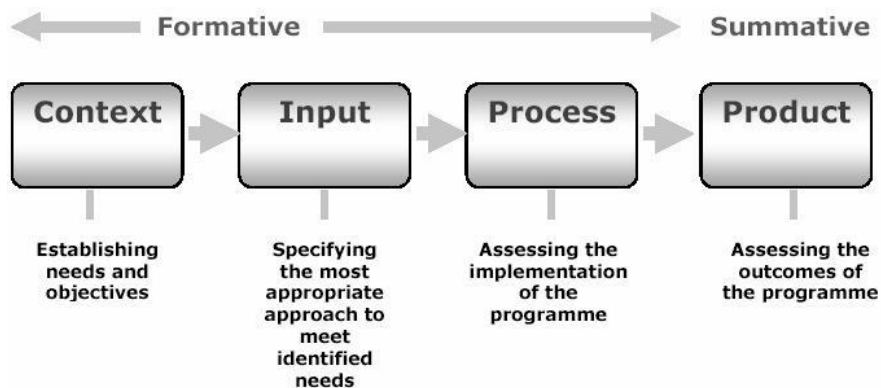
L ZANAMWE
A/PROVINCIAL EDUCATION DIRECTOR-MATABELELAND SOUTH



APPENDIX C: Observation Schedule

Name of School:

Stufflebeam's CIPP evaluation model (1966) will be used.



Source: Zhang et al (2011)

- a. **Content:** Assessing whether the content in exercise books is in context in terms of the syllabus, whether the content covered is in line with the aims and objectives of the syllabus and the needs of the individual learners.

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- b. **Input:** Assessing school children's input in terms of the material they write by looking at their exercise books and class register for absence from school. School attendance is part of the child's input towards achieving desired goals. Assessing whether children always have required resources such as exercise books, this will be checked by assessing whether they always write their exercises in class.

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- c. **Process:** Assessing teaching-learning activities towards the achievement of desired goals by looking at the teachers' comments in the exercise books, the amount of work given to children, handling of examinations and time taken to give children feedback.

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- d. **Product:** Assessing the marks of the children by looking at their exercise books and record of marks (marks schedule).

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APPENDIX D: An Interview Schedule for Administrators

Name of School:

Title of Administrator:

1. What is your general understanding of food insecurity in relation to primary school children?

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2. How would you rate your school children in terms of food insecurity?

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3. What are the signs of food insecurity amongst your school children?

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4. How often do school children show signs of food insecurity?

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5. How does food insecurity affect your pupils' attendance and academic performance?

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6. What type of food do school children bring to school?

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7. How do school children utilize their tea break and lunch periods?

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8. How many meals per day do children eat?

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9. What do you think are the possible causes of food insecurity in the community?

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10. What are the main sources of livelihoods in the community?

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11. What is the employment status of the guardians of the children?

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12. What adaptation strategies or safety nets are in place to mitigate food insecurity?

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13. What are the challenges faced in trying to implement coping measures?

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14. What kind of supplementary feeding should be adopted in schools?

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15. How should supplementary feeding be adopted in schools?

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APPENDIX E: An Interview Schedule for Teachers

Name of School:

1. What is your general understanding of food insecurity in relation to primary school children?

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2. How would you rate your school children in terms of food insecurity?

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3. What are the signs of food insecurity amongst your school children?

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4. How often do school children show signs of food insecurity?

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5. How does food insecurity affect your pupils' attendance and academic performance?

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6. What type of food do school children bring to school?

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.....

7. How do school children utilize their tea break and lunch periods?

.....

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.....

8. How many meals per day do children eat?

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9. What do you think are the possible causes of food insecurity in the community?

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10. What are the main sources of livelihoods in the community?

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11. What is the employment status of the guardians of the children?

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12. What adaptation strategies or safety nets are in place to mitigate food insecurity?

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13. What are the challenges faced in trying to implement coping measures?

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14. What kind of supplementary feeding should be adopted in schools?

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15. How should supplementary feeding be adopted in schools?

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APPENDIX F: Focus Group Discussion for Teachers

Name of School:

1. What is your general understanding of food insecurity in relation to primary school children?
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2. How would you rate your school children in terms of food insecurity?
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3. What are the signs of food insecurity amongst your school children?
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.....
4. How often do school children show signs of food insecurity?
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5. How does food insecurity affect your pupils' attendance and academic performance?
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6. What type of food do school children bring to school?
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7. How do school children utilize their tea break and lunch periods?

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8. How many meals per day do children eat?

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9. What do you think are the possible causes of food insecurity in the community?

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.....
10. What are the main sources of livelihoods in the community?

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.....
11. What is the employment status of the guardians of the children?

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.....
12. What adaptation strategies or safety nets are in place to mitigate food insecurity?

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.....
13. What are the challenges faced in trying to implement coping measures?

.....
.....
14. What kind of supplementary feeding should be adopted in schools?

.....
.....
15. How should supplementary feeding be adopted in schools?

APPENDIX G: Focus Group Discussion for Parents

Name of School:

1. What is your general understanding of food insecurity in relation to children?

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2. How would you rate your children in terms of food insecurity?

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3. What are the signs of food insecurity amongst your children?

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4. How often do children show signs of food insecurity?

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5. How does food insecurity affect your children's school attendance and academic performance?

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6. What type of food do your children take to school?

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7. How many meals per day do children eat?

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8. What do you think are the possible causes of food insecurity in the community?

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9. What are the main sources of livelihoods are there in the community?

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10. What adaptation strategies or safety nets are in place to mitigate food insecurity?

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11. What are the challenges faced in trying to implement coping measures?

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12. What kind of supplementary feeding should be adopted in schools?

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13. How should supplementary feeding be adopted in schools?

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APPENDIX H: Letter of Consent for the School Administrators

Social Sciences, College of Humanities,
University of KwaZulu-Natal,
Edgewood campus

Dear Participant (School Administrator)

My name is **Nkululeko Joshua Ndiweni**. I am a Philosophy of Education PhD candidate studying at the University of KwaZulu-Natal, Edgewood campus, South Africa. I am interested in studying about **The Vulnerability of Primary School Children in South Western Zimbabwe to Food Insecurity**. Your school is my case study. To gather the information, I am interested in asking you some questions.

Please note that:

- Your confidentiality is guaranteed as your inputs will not be attributed to you in person, but reported only as a population member opinion.
- The interview may last for about 90 minutes and may be split depending on your preference.
- Any information given by you cannot be used against you, and the collected data will be used for purposes of this research only.
- Data will be stored in secure storage and destroyed after 5 years.
- You have a choice to participate, not participate or stop participating in the research. You will not be penalized for taking such an action.
- The research aims at exploring the nature of children's vulnerability to food insecurity in your school. Your involvement is purely for academic purposes only, and there are no financial benefits involved.
- If you are willing to be interviewed, please indicate (by ticking as applicable) whether or not you are willing to allow the interview to be recorded by the following equipment:

	Willing	Not willing
Audio equipment		
Photographic equipment		
Video equipment		

I can be contacted at:

Email: **njndiweni@gmail.com**

Cell: **+263712315916**

My supervisor is Dr. **Sadhana Manik** who is located at the School of Social Sciences, College of Humanities, Edgewood campus of the University of KwaZulu-Natal.

Contact details: email: manik@ukzn.ac.za

You may also contact the Research Office through:

P. Mohun

HSSREC Research Office,

Tel: 031 260 4557 E-mail: mohunp@ukzn.ac.za

Thank you for your contribution to this research.

DECLARATION

**I (Full names of the participant)
hereby state that I understand the contents of this document and the nature of the research
project, and I consent to participating in the research project.**

I understand that I am at liberty to withdraw at anytime, should I desire to do so.

SIGNATURE OF PARTICIPANT:.....DATE:

APPENDIX I: Letter of Consent for the Participating Teacher

Social Sciences, College of Humanities,
University of KwaZulu-Natal,
Edgewood campus

Dear Participant (Teacher)

My name is **Nkululeko Joshua Ndiweni**. I am a Philosophy of Education PhD candidate studying at the University of KwaZulu-Natal, Edgewood campus, South Africa. I am interested in studying about **The Vulnerability of Primary School Children in South Western Zimbabwe to Food Insecurity**. Your school is my case study. To gather the information, I am interested in asking you some questions.

Please note that:

- Your confidentiality is guaranteed as your inputs will not be attributed to you in person, but reported only as a population member opinion.
- The interview may last for about 90 minutes and may be split depending on your preference.
- Any information given by you cannot be used against you, and the collected data will be used for purposes of this research only.
- Data will be stored in secure storage and destroyed after 5 years.
- You have a choice to participate, not participate or stop participating in the research. You will not be penalized for taking such an action.
- The research aims at exploring the nature of children's vulnerability to food insecurity in your school. Your involvement is purely for academic purposes only, and there are no financial benefits involved.
- If you are willing to be interviewed, please indicate (by ticking as applicable) whether or not you are willing to allow the interview to be recorded by the following equipment:

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Audio equipment		
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I can be contacted at:

Email: **njndiweni@gmail.com**

Cell: **+263712315916**

My supervisor is Dr. **Sadhana Manik** who is located at the School of Social Sciences, College of Humanities, Edgewood campus of the University of KwaZulu-Natal.

Contact details: email: manik@ukzn.ac.za

You may also contact the Research Office through:

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Tel: 031 260 4557 E-mail: mohunp@ukzn.ac.za

Thank you for your contribution to this research.

DECLARATION

**I (Full names of the participant)
hereby state that I understand the contents of this document and the nature of the research
project, and I consent to participating in the research project.**

I understand that I am at liberty to withdraw at anytime, should I desire to do so.

SIGNATURE OF PARTICIPANT:.....DATE:

APPENDIX J: Letter of Consent for the Participating Parent

Social Sciences, College of Humanities,
University of KwaZulu-Natal,
Edgewood campus,

Dear Participant (Parent)

My name is **Nkululeko Joshua Ndiweni**. I am a Philosophy of Education PhD candidate studying at the University of KwaZulu-Natal, Edgewood campus, South Africa. I am interested in studying about: **The Vulnerability of Primary School Children in South Western Zimbabwe to Food Insecurity**. Your school is my case study. To gather the information, I am interested in asking you some questions.

Please note that:

- Your confidentiality is guaranteed as your inputs will not be attributed to you in person, but reported only as a population member opinion.
- The interview may last for about 90 minutes and may be split depending on your preference.
- Any information given by you cannot be used against you, and the collected data will be used for purposes of this research only.
- Data will be stored in secure storage and destroyed after 5 years.
- You have a choice to participate, not participate or stop participating in the research. You will not be penalized for taking such an action.
- The research aims at exploring the nature of children's vulnerability to food insecurity in your school. Your involvement is purely for academic purposes only, and there are no financial benefits involved.
- If you are willing to be interviewed, please indicate (by ticking as applicable) whether or not you are willing to allow the interview to be recorded by the following equipment:

	Willing	Not willing
Audio equipment		
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I can be contacted at:

Email: **njndiweni@gmail.com**

Cell: **+263712315916**

My supervisor is Dr. **Sadhana Manik** who is located at the School of Social Sciences, College of Humanities, Edgewood campus of the University of KwaZulu-Natal.

Contact details: email: **manik@ukzn.ac.za**

You may also contact the Research Office through:

P. Mohun

HSSREC Research Office,

Tel: 031 260 4557 E-mail: mohunp@ukzn.ac.za

Thank you for your contribution to this research.

DECLARATION

**I (Full names of the participant)
hereby state that I understand the contents of this document and the nature of the research
project, and I consent to participating in the research project.**

I understand that I am at liberty to withdraw at anytime, should I desire to do so.

SIGNATURE OF PARTICIPANT:.....DATE: